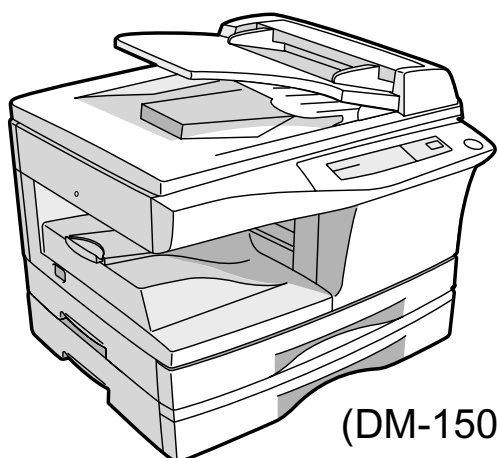


SHARP SERVICE MANUAL

CODE: 00ZDM1505/A1E



(DM-1505)

DIGITAL COPIER

MODEL **DM-1500**
DM-1505

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Parts marked with "△" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

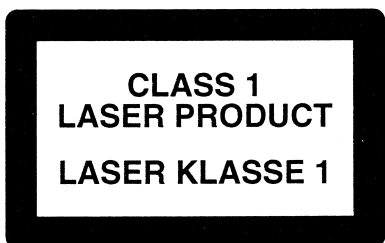
CAUTION

This product is a class 1 laser product that complies with 21CFR 1040.10 and 1040.11 of the CDRH standard and IEC825. This means that this machine does not produce hazardous laser radiation. The use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This laser radiation is not a danger to the skin, but when an exact focusing of the laser beam is achieved on the eye's retina, there is the danger of spot damage to the retina.

The following cautions must be observed to avoid exposure of the laser beam to your eyes at the time of servicing.

- 1) When a problem in the laser optical unit has occurred, the whole optical unit must be exchanged as a unit, not as individual parts.
- 2) Do not look into the machine with the main switch turned on after removing the developer unit, toner cartridge, and drum cartridge.
- 3) Do not look into the laser beam exposure slit of the laser optical unit with the connector connected when removing and installing the optical system.
- 4) The middle frame contains the safety interlock switch.
Do not defeat the safety interlock by inserting wedges or other items into the switch slot.



LASER WAVE – LENGTH : 780 ~ 795
Pulse times : 0.481 ms/6 mm
Out put power : 0.20 ± 0.03 mW

CAUTION

INVISIBLE LASER RADIATION,
WHEN OPEN AND INTERLOCKS DEFEATED.
AVOID EXPOSURE TO BEAM.

VORSICHT

UNSICHTBARE LASERSTRAHLUNG,
WENN ABDECKUNG GEÖFFNET UND
SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT.
NICHT DEM STRAHL AUSSETZEN.

VARO !

AVATTAESSA JA SUOJALUKITUS
OHITETTAESSA OLET ALTTIINA
NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE ÄLÄ
KATSO SÄTEESEEN.

ADVARSEL

USYNLIG LASERSTRÅLNING VED ÅBNING, NÅR
SIKKERHEDSBRYDERE ER UDE AF
FUNKTION. UNDGÅ UDSAETTELSE FOR
STRÅLNING.

VARNING !

OSYNLIG LASERSTRÅLNING NÅR DENNA DEL
ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD.
BETRAKTA EJ STRÅLEN. – STRÅLEN ÄR FARLIG.

At the production line, the output power of the scanner unit is adjusted to 0.57 MILLI-WATT PLUS 20 PCTS and is maintained constant by the operation of the Automatic Power Control (APC). Even if the APC circuit fails in operation for some reason, the maximum output power will only be 15 MILLI-WATT 0.1 MICRO-SEC. Giving and accessible emission level of 42 MICRO-WATT which is still-less than the limit of CLASS-1 laser product.

Caution

This product contains a low power laser device. To ensure continued safety do not remove any cover or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.



Laserstrahl

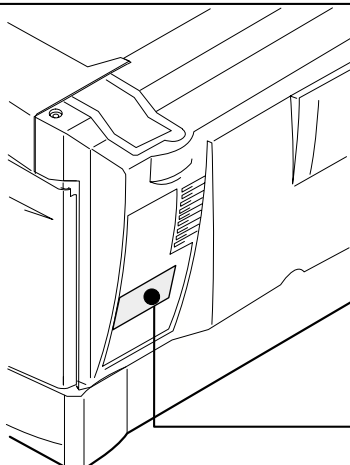
CAUTION INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED.
AVOID EXPOSURE TO BEAM.
VORSICHT UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET UND SICHERHEITSVERRIEGELUNG ÜBERRÜCKT. NICHT DEM STRAHL AUSSETZEN.
ADVARSEL USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

ADVERSEL USYNLIG LASERSTRÅLING NÅR ØKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES.
UNNGÅ EKSPONERING FOR STRÅLEN.
VARNING OSYNLIG LASERSTRÅLING NÅR DENNA DEL ÄR ÖPPNAD OCH SPÄRRAR ÄR URKOPPLADE. STRÅLEN ÄR FARLIG. BETRakta EJ STRÅLEN.
VARO! AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTIINA NÄKYMÄTÖNTÄ LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.



VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTÖMÄLLE LASERSÄTEILYLLE.

VARNING - OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.



The foregoing is applicable only to the 220V model, 230V model and 240V model.

**CLASS 1
LASER PRODUCT
LASER KLASSE 1**

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

[1] GENERAL

1. Major functions

Item Model	CPM	SB/MB	2 Tray	SPF	R-SPF	FAX	GDI with USB	GDI without USB	PCL with USB	SOPM	Duplex
DM-1500	15CPM	MB	○	○	×	×	×	×	○	○	×
DM-1505	15CPM	MB	○	×	○	×	×	×	○	○	○

Descriptions of items

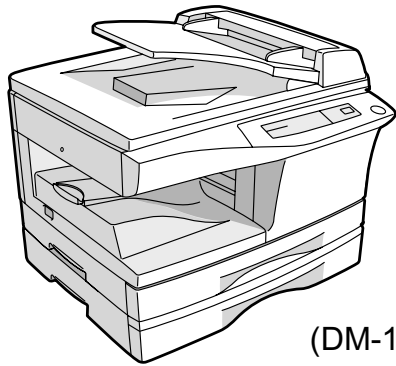
CPM:	Copy speed (Copies Per Minute)
SB/MB:	SB = Manual feed single bypass, MB = Manual feed multi bypass
2 tray:	Second cassette unit.
SPF:	Original feed unit
R-SPF:	Duplex original feed unit
FAX:	FAX function.
GDI with USB:	GDI printer function with USB.
GDI without USB:	GDI printer function without USB.
PCL with USB:	PCL printer function with USB.
SOPM:	Scan One Print Many function (Many copies are made by one scan.)
Duplex:	Auto duplex copy function

Descriptions of table

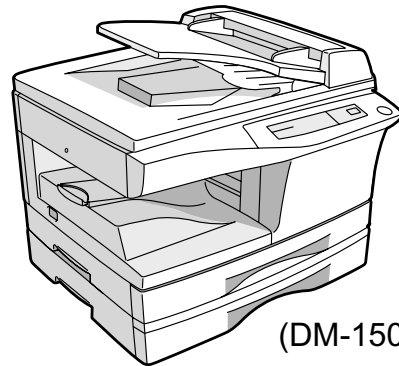
- : Standard provision
- ×

× : No function or no option available

2. System Configuration



(DM-1500)



(DM-1505)

[2] SPECIFICATIONS

1. Basic specifications of copier

A. Basic specifications

Item	Spec.
Type	Desktop
Copy system	Dry, electrostatic
Segment (class)	Digital personal copier
External dimensions (W × D × H) (mm)	DM-1500/DM-1505: 518mm × 482.6mm × 464mm
Weight	DM-1500: Approx. 25Kg, (drum cartridges included) DM-1505: Approx. 26Kg, (drum cartridges included)

B. Operation specification

Section	Item		Details	Spec.
Paper feed section	Paper feed system			DM-1500/DM-1505: 2 tray (250 sheets) + multi bypass (50 sheets)
	AB system	Tray paper feed section	Paper size	A4, B5, A5 (Landscape)
			Paper weight	56 – 80g/m ²
			Paper feed capacity	250 sheets
			Kinds	Standard paper, specified paper, recycled paper
			Remark	User adjustment of paper guide available
		Multi bypass paper feed section	Paper size	A4, B5, A5, B6, A6 (Landscape)
			Paper weight	52 – 128g/m ²
			Paper feed capacity	50 sheets
			Kinds *1	Standard paper, specified paper, recycled paper, OHP, Label, Postal card
			Remark	User adjustment of paper guide available
	Inch system	Tray paper feed section	Paper size	8-1/2" × 14", 8-1/2" × 11", 8-1/2" × 5-1/2" (Landscape)
			Paper weight	15 – 21 lbs.
			Paper feed capacity	250 sheets
			Kinds	Standard paper, specified paper, recycled paper
			Remark	User adjustment of paper guide available
		Multi bypass paper feed section	Paper size	8-1/2" × 14", 8-1/2" × 11", 8-1/2" × 5-1/2", 3-1/2" × 5-1/2" (Landscape)
			Paper weight	14 – 34.5 lbs.
			Paper feed capacity	50 sheets
			Kinds *1	Standard paper, specified paper, recycled paper, OHP, Label, Postal card
			Remark	User adjustment of paper guide available
Paper for Duplex	AB system		Paper size	A4, B5, A5 (Landscape)
			Paper weight	56 – 80 g/m ²
			Kinds	Standard paper, Specified paper, Recycled paper
	Inch system		Paper size	8-1/2" × 14", 8-1/2" × 11", 8-1/2" × 5-1/2" (Landscape)
			Paper weight	15-21 lbs.
			Kinds	Standard paper, Specified paper, Recycled paper

*1: OHP, Label, Postal card: each 1 pc.

Section		Item	Details	Spec.
Paper exit section		Exit way		Face down
		Capacity of output tray		100 sheets
Originals		Original set		Center Registration (left edge)
		Max. original size		B4 (10″ × 14″)
		Original kinds		sheet
		Original size detection		None
Optical section	Scanning section	Scanning system		CCD sensor scanning by lighting lamp scanner
		CCD sensor	Resolution	400 dpi
		Lighting lamp	Type	Xenon lamp
			Voltage	1.5kV
			Power consumption	11 ± 3W
		Gradation		256 gradations/8bit
	Writing section	Writing system		Writing to OPC drum by the semiconductor laser
		Laser unit	Resolution	600 dpi
Image forming		Photoconductor	Type	OPC (30φ)
			Life	18k
		Charger	Charging system	Saw -tooth charging with a grid
			Transfer system	(+) DC corotron system
			Separation system	(-) DC corotron system
		Developing	Developing system	Dry, 2-component magnetic brush development system
		Cleaning	Cleaning system	Counter blade system (Counter to rotation)
Fusing section		Fusing system		Heat roller system
		Upper heat roller	Type	Teflon roller
		Lower heat roller	Type	Silicon rubber roller
		Heater lamp	Type	Halogen lamp
			Voltage	100V/120V/230V
			Power consumption	800W
Electrical section		Power source	Voltage	Local AC voltage
			Frequency	Common use for 50 and 60Hz
		Power consumption	Max.	DM-1500/DM-1505: 1000W
			Average (during copying) ^{*1)}	DM-1500/DM-1505: 310Wh/H
			Average (stand-by) ^{*1)}	DM-1500/DM-1505: 70Wh/H
			Pre-heat mode ^{*1)}	DM-1500/DM-1505: 40Wh/H
			Auto power shut-off mode ^{*1)}	DM-1500/DM-1505: 20Wh/H

*1) May fluctuate due to environmental conditions and the input voltage.

C. Copy performance

Section	Item	Details	Spec.
Copy magnification	Fixed magnification ratios		3R + 2E (AB system: 50, 70, 81, 100, 141, 200%) (Inch system: 50, 64, 78, 100, 129, 200%)
	Zooming magnification ratios		50 ~ 200% (151 steps in 1% increments)
Exposure mode			Auto/Manual/Photo
Manual steps (manual, photo)			5 steps

Section		Item		Details	Spec.
Copy speed		First copy time		Tray paper feed	9.6 sec. or below (A4) (Pre-heat mode: 16 sec. or below / Auto power-shut-off mode: 23 sec. or above)
				Manual paper feed	10.0 sec (Pre-heat mode: 16 sec. or below / Auto power-shut-off mode: 23 sec. or above)
	AB system: A4 (Landscape)	Copy speed (CPM)	Same size	15	
			Enlargement	15	
			Reduction	15	
	AB system: B5 (Landscape)	Copy speed (CPM)	Same size	15	
			Enlargement	15	
			Reduction	15	
	Inch system: 8-1/2" × 14" (Landscape)	Copy speed (CPM)	Same size	12	
			Enlargement	12	
			Reduction	12	
	Inch system: 8-1/2" × 11" (Landscape)	Copy speed (CPM)	Same size	15	
			Enlargement	15	
			Reduction	15	
Max. continuous copy quantity				99	
Void		Void area		Leading edge	1 ~ 4mm
				Trailing edge	4mm or less, 6mm or less (Duplex copying/both images)
				Side edge void area	machine with side edge void 0.5mm ~ 4.5mm (Total of both edge voids)
		Image loss	OC mode	Leading edge	Same size: 3.0mm or less / Enlarge (200%): 1.5mm or less / Reduction (50%): 6.0mm or less
			SPF/R-SPF/ Duplex	Leading edge	Same size: 4.0mm or less / Enlarge (200%): 3.0mm or less / Reduction (50%): 8.0mm or less
Warm-up time				0 sec.	
Power save mode reset time				0 sec.	
Paper jam recovery time				0 sec.	

D. Printer specifications

Item	Contents	
Print speed	15 PPM	
First print	9.6 sec	
Resolution	600 dpi, 300 dpi	
Toner save	No	
Duplex print	Yes (for duplex capable copier)	
Paper feed tray	Multi bypass tray Tray 1, Tray 2	
Paper size	Multi bypass tray	A4R, B5R, A5R, 8.5" × 14", 8.5" × 11"R, 8.5" × 5.5"R, 8.5" × 13", 8.5" × 12.4"R, DL, C5, COM10, Monarch
	Tray 1 ~ 2	A4R, B5R, A5R, 8.5" × 14"R, 8.5" × 11"R, 8.5" × 5.5"R, 8.5" × 13"R, 8.5" × 12.4"R
Page description language (standard)	PCL6 (PCL XL) emulation PCL5e emulation	
Dot emulation	None	
Page protection	Yes	

Item	Contents		
Interface (Standard)	IEEE1284 port × 1		
	USB port × 1		
Applicable Interface Cable	Parallel cable compliant IEEE1284 and less than 2.0m (Shield and earth equipped) USB cable less than 2.0 m		
Auto Interface Switching	No		
Auto Emulation Switching	Yes		
Plug and Play	Yes		
Printer Driver(*)		PCL6 (PCL XL)	PCL5e
	MS Windows3.1	No	Yes
	MS Windows95	Yes	Yes
	MS Windows98	Yes	Yes
	MS Windows NT4.0	Yes	Yes
Resident Font	45 outline fonts compatible to PCL6		
Screen Font	45 outline fonts compatible to PCL6		

Item	Contents	
Memory	Standard	Maximum
	8MB	72MB
Expansion Slot for Memory	One DIMM slots	
Expansion Memory	64MB, 32MB, 16MB (commercially-available DIMM:EDO)	
Operation Panel	Switches	1 (Online/Offline)
	Lamps	2 (DATA, ONLINE)
	Display	None
Applicable PC	IBM PC-AT Compatibles	

*: Only Win 98 can be used for USB users.

Operations when both of USB/parallel ports are connected at the same time.

The USB port has a priority over the parallel port.

Smartsharing is invalid.

Interface connected previously	Interface connected later	Operation
USB (Unfinished print job YES/NO)	Parallel port	USB: Enable
		Parallel port: Disable
Parallel port (Unfinished print job YES/NO)	USB	When USB is connected after 30sec of no communication through the parallel port, the mode is shifted to the USB mode instantaneously. If no communication state does not reach 30sec yet, shifting to the USB mode is retained until 30sec passes. During that time, print jobs are performed through the parallel port.
Parallel port (Unfinished print job YES/NO)	USB	After completion of unfinished print jobs, if there is no communication for 30sec, shifting to the USB mode is made. Within 30sec, print jobs are performed through the parallel port.

[3] CONSUMABLE PARTS

1. Supply system table

A. USA, CANADA

No.	Name	Content	Life	Product name	Package	Remark
1	Developer cartridge (Black) <With IC>	Toner/developer cartridge × 1 (Toner: 220g, Developer: 190g) IC chip × 1 Warranty Card × 1 Postcard label × 1 Returned Operation Manual × 1 Polyethene bag × 1	6K	DM-150TD	5	Life setup is based on A4 5% documents. For 6% coverage, 5K life.
2	Drum cartridge	Drum cartridge × 1 Warranty Card × 1	18K	DM-150DR	5	

2. Environmental

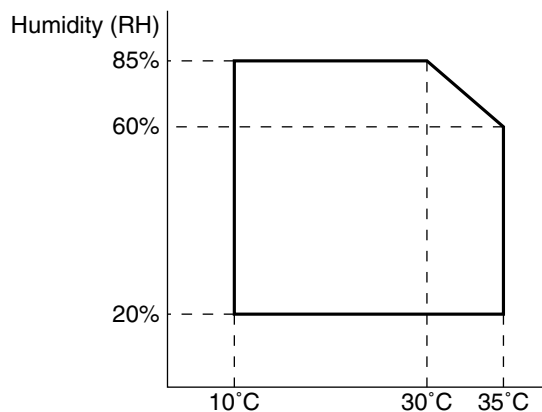
The environmental conditions for assuring the copy quality and the machine operations are as follows:

(1) Normal operating condition

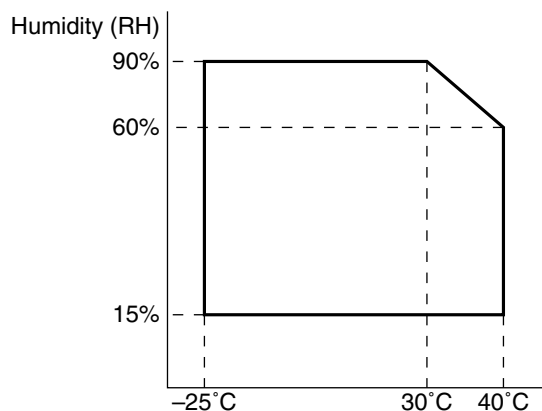
Temperature: 20°C~25

Humidity: 65 ± 5%RH

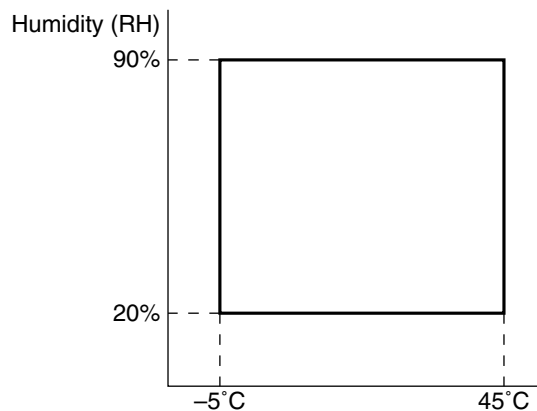
(2) Acceptable operating condition



(3) Optical condition

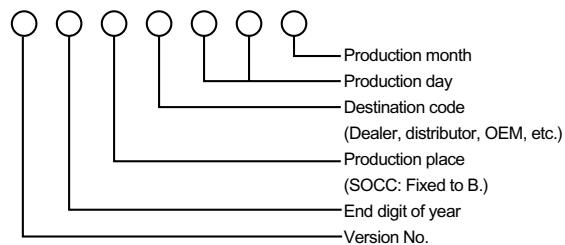


(4) Supply storage condition



3. Production control number (lot No.) identification

〈Developing cartridge〉

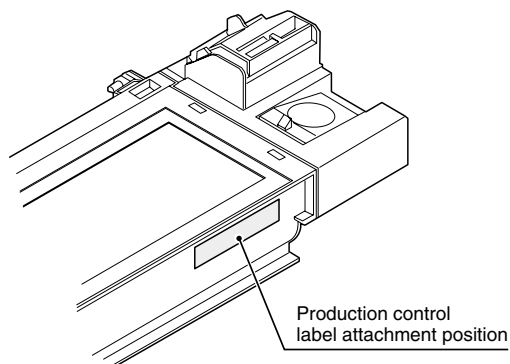
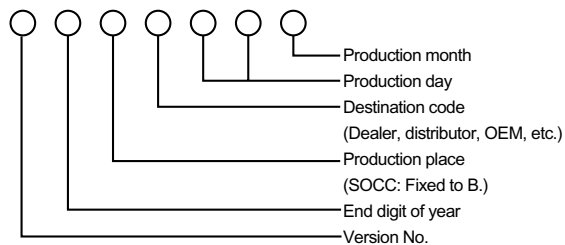


※: Destination

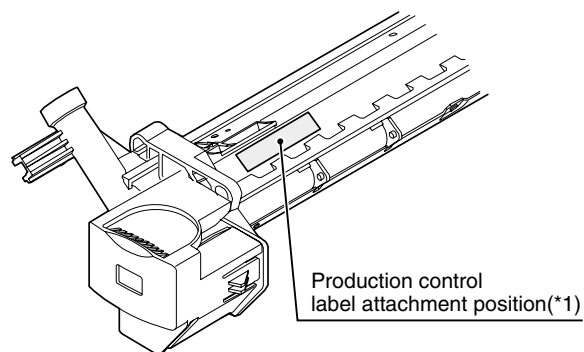
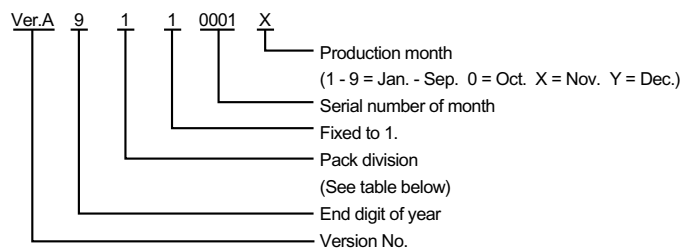
Division		No.
EX Destination	A same pack	G
	B same pack	H
Option Destination	A	P
	B	Q

〈Drum cartridge〉

The label on the drum cartridge shows the date of production.
(SOCC production)



〈JAPAN production〉



Division	No.
Ex production	1
Option	2
Same pack	3

*1 The production control label is not attached to the cartridge of a China product.

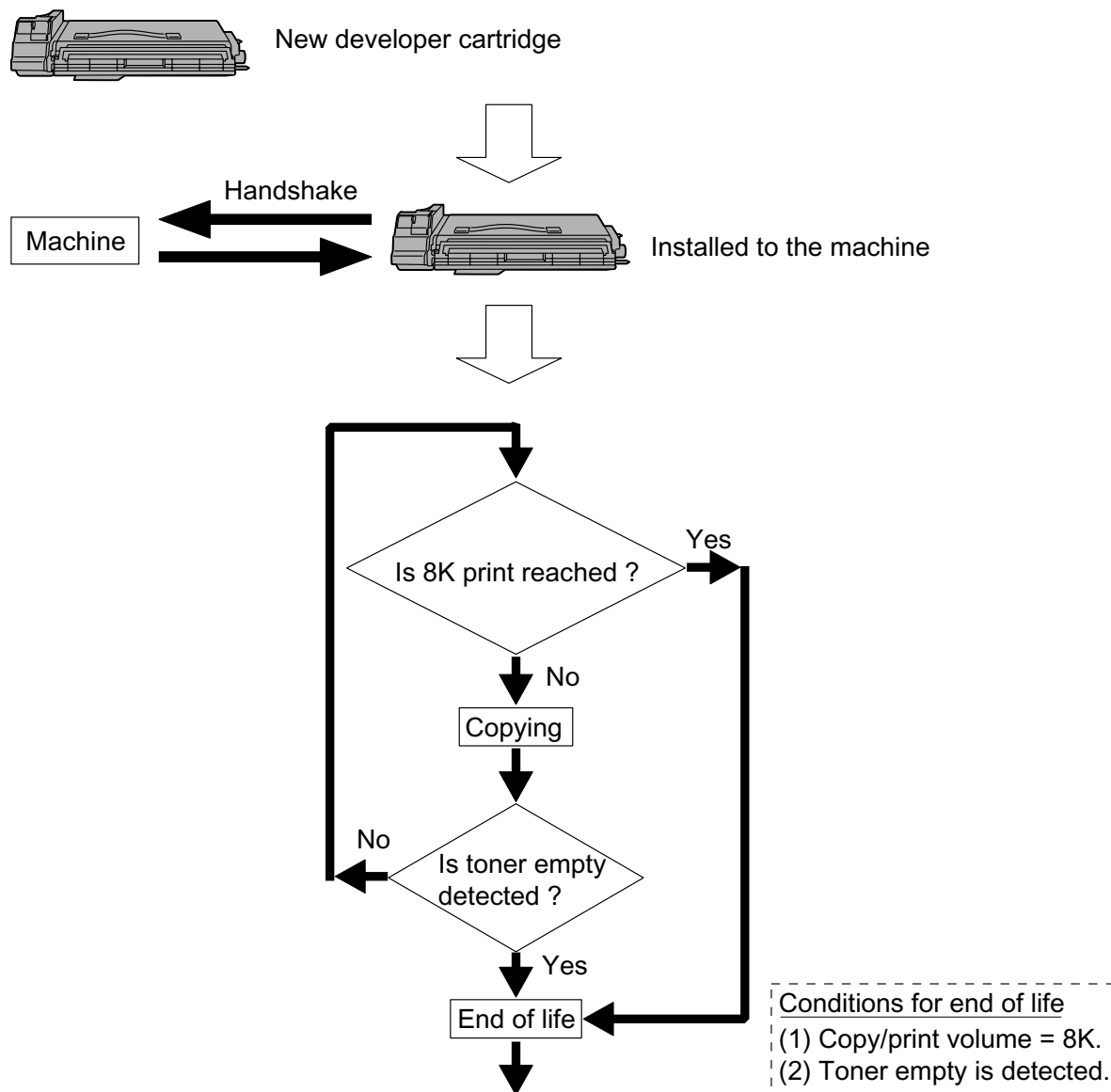
4. Memory Device

A. Function

The memory device is used to monitor the life of the developer cartridge in the way that the machine reads and writes information (e.g. page count) to the memory device equipped in the developer cartridge.

When the life is reached, the memory device becomes nonfunctional to prevent the deterioration of image/text quality and machine damages. Therefore, unnecessary service costs would be saved.

B. Flowchart



C. Display timing of DM-1500/1505 maintenance lamps, toner lamp and error codes

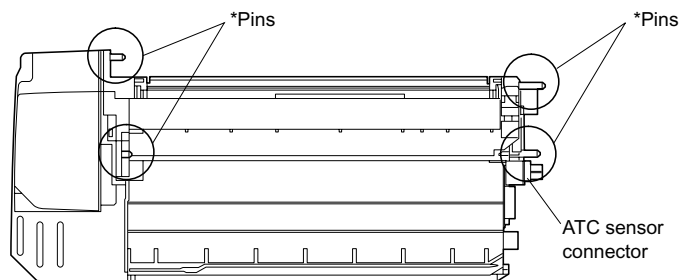
		Remaining print quantity ≥ 8K			Remaining print quantity < 8K			Remaining print quantity = 0	
		Maintenance lamp	Toner lamp	Error code	Maintenance lamp	Toner lamp	Error code	Toner lamp	Error code
During maintenance period	Start	OFF	OFF	–	OFF	OFF	–	OFF	–
	Toner Near	OFF	ON	–	OFF	ON	–	ON	–
	Toner End	OFF	BLINK	–	OFF	BLINK	F2	BLINK	F2
After maintenance period	Start	ON	OFF	–	ON	OFF	–	OFF	–
	Toner Near	ON	ON	–	ON	ON	–	ON	–
	Toner End	ON	BLINK	–	ON	BLINK	F2	BLINK	F2

Note: When the memory device is faulty, “U2” will be displayed.

5. Consumable parts refill procedure

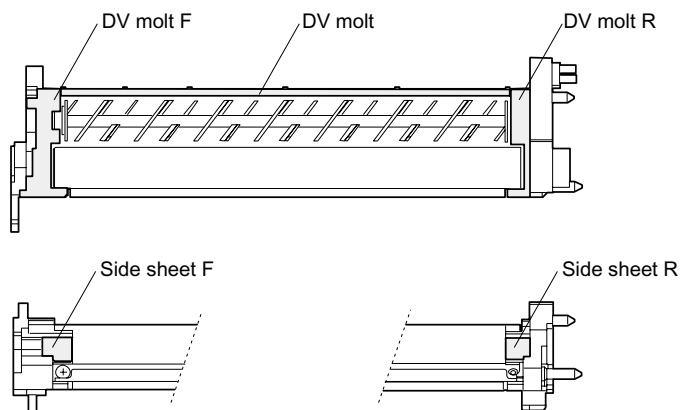
[External view check points]

Check for breakage of the four pins (*) and the ATC sensor connector of the DV BOX unit.



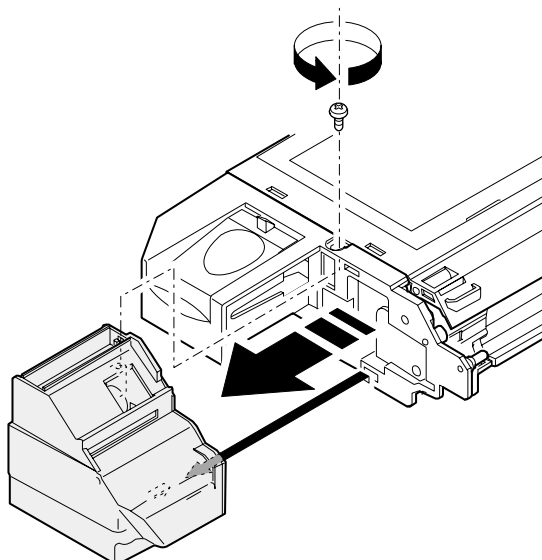
Check for breakage of molt and suede.

(For reattachment, refer to the reattachment procedure.)



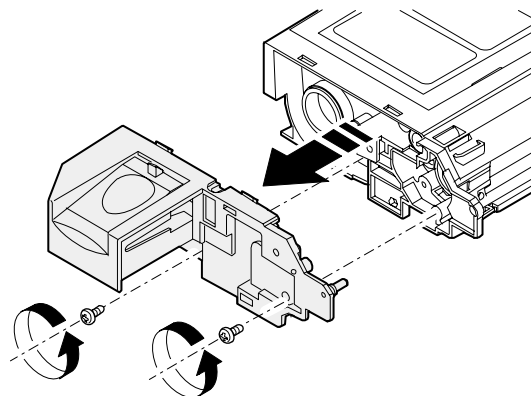
A. TD cartridge

1) Remove the waste toner box unit

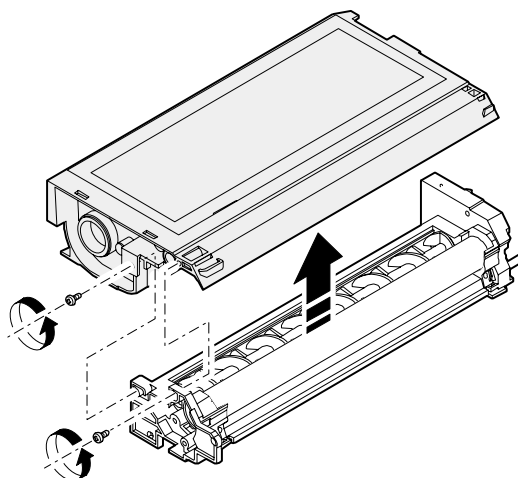


2) Remove the DVF cover unit.

- When removing, be careful not to break the two pins.

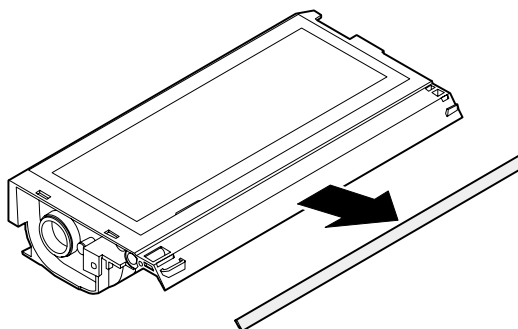


3) Remove the THBOX unit.

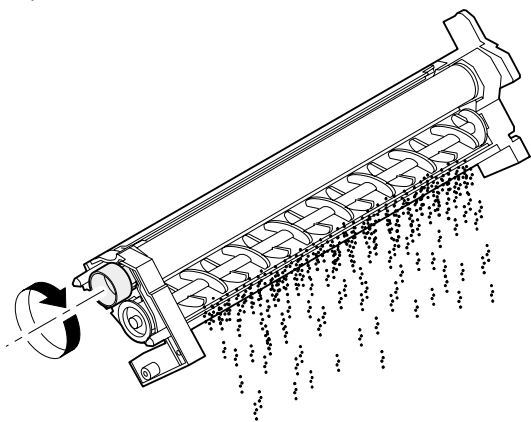


4) Remove the DV blade.

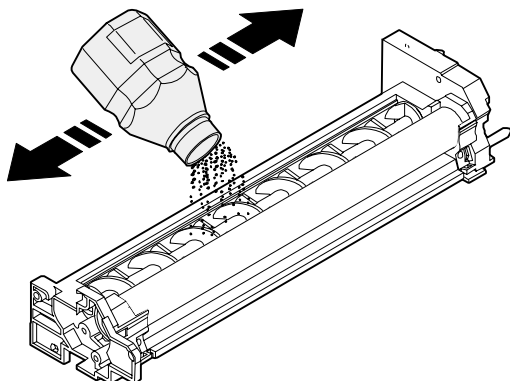
- Remove excessive glue.
- Remove together with the base PET.



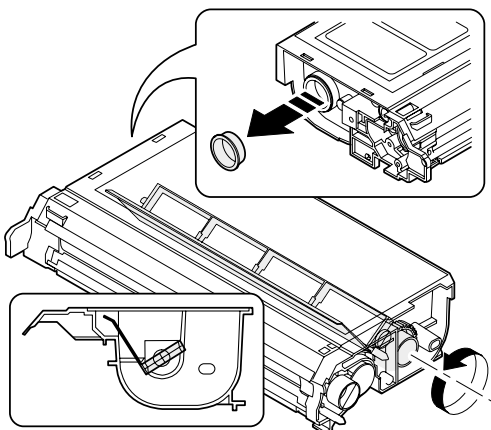
- 5) Tilt the DV box unit and rotate the DV18T clockwise to remove developer.



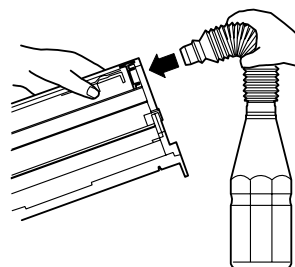
- 6) Clean the DV box unit by sucking or blowing with a vacuum cleaner to remove developer from the MG roller and toner from the DV box unit. Check that there is no toner or no foreign material attached to the connector and the gear.
- 7) Shake the developer bottle 10 times up and down, and remove the bottle cap and supply developer into the DV box unit.
- Slowly slant the bottle to supply developer evenly.
 - Check the label to insure that developer is suitable for the model.



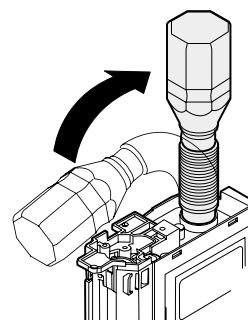
- 8) Install the THBOX unit.
- Insert two bosses of TH box on the drive side into the positioning hole of the DV box and fix together.
- 9) Remove the toner cap, look into the toner supply port and stop the THD Mylar at the position shown in the figure below. (Rotate the THK gear on the rear side of the TH box counterclockwise to rotate the TM shaft.)
- 10) Shake the toner box 20 times up and down, and remove the bottle cap and install the refill hose. Check the label to insure that toner is suitable for the model.



- 11) Face the toner supply port of the TH box unit upward, and press and insert the refill hose into the toner supply port with the toner bottle kept straight up.
- Hold the left side of the TH box with your hand.
 - Press and insert the refill hose completely.

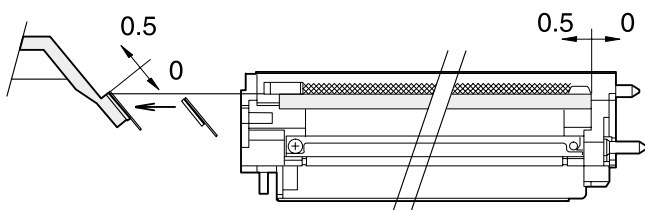


- 12) Lift the toner bottle and shake it left and right and supply toner until the bottle and the filling hose are empty.
- It takes about one minute to fill toner completely in TH BOX UN from lifting the toner bottle to emptying the bottle and the hose.
 - If toner remains in the hose, when removing the hose from TH BOX UN, the remaining toner may disperse. Use great care for that.

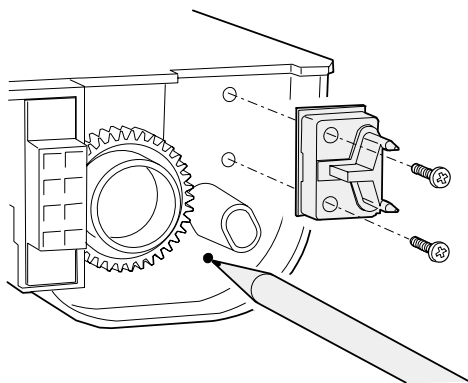


- 13) Check that there is no toner remaining in the bottle and remove the hose, and slowly pull and remove the hose. (If there is any toner remaining in the bottle or the hose, perform toner supply again.)
- Bend the refill hose and remove it from the TH box unit without dispersing toner. Attach the toner cap.
- Attach the toner cap with the toner supply port of the TH box unit faced upward.

- 14) Clean the DV box unit with alcohol and attach the DV blade.
 - After drying the unit, attach the DV blade.
 - After attachment, check that there is no scratch and waves on the DV blade.
 - After attachment, be careful not to damage the DV blade.
 - Check that there is no foreign material in the DV blade and the section.



- 15) Install the DVF cover to the DV-TH box unit.
- 16) Clean the waste toner box unit and install it to the DV box unit. (Check that there is no toner in the waste toner box) Be careful of the pawl.
- 17) Replace the IC connector. Check that there is no oil on the IC connector pins. (Do not touch with fingers.)



Put a white mark on the above position.

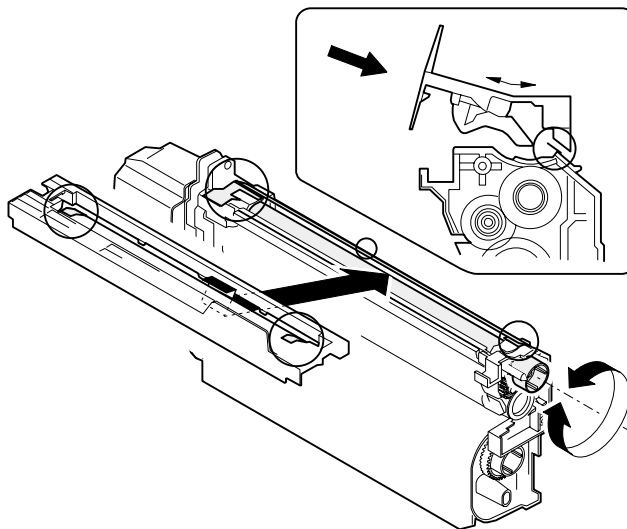
At that time, put marking for checking of the number of refilling.

- 18) Check the operations of the DV lever and the toner box shutter.
- 19) Shake the DV box unit 5 times horizontally. Rotate the DV18T clockwise and check developer state on the MG roller. (Visually check that developer state is normal and there is no foreign material.)

- 20) Install the MG cover.

Put the unit straight with the MG roller on the upper side. Rotate the DV18T several times forward and reverse to store developer on the MG roller into the inside. Check that there is no developer on the MG roller surface, and install the MG cover.

Note: When attaching the MG cover, be careful not to wind around the DV blade.



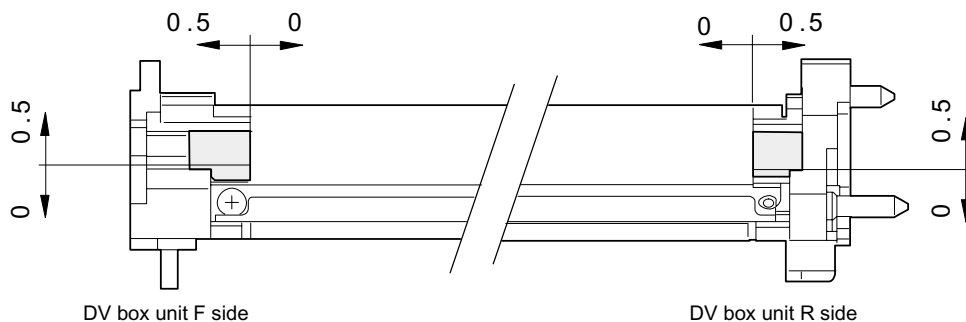
Note for MG cover installation

- When installing, check that there is no breakage and peel-off of the MG cover sheet and the MG cover molt attached to the MG cover.
- Check that there is no winding into the DV blade, deformation and scratches of DV molt F and R.

[The reattachment procedure]

Remove the side sheets on the both sides of DV box unit.

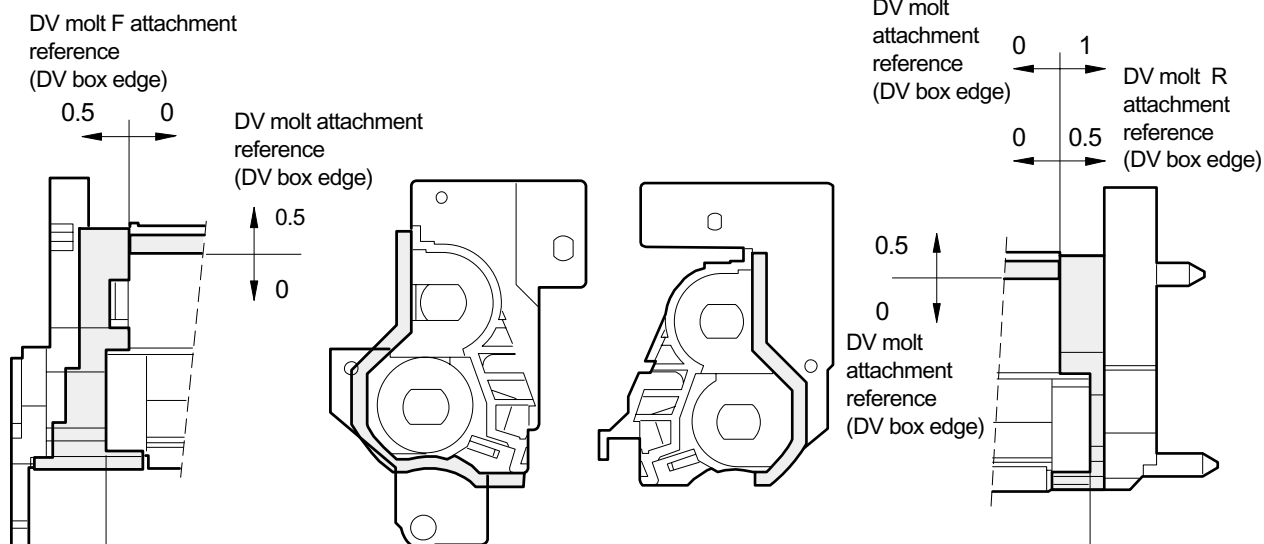
Clean the DV box unit with alcohol and reattach the side sheets F and R to the both sides.



- Remove glue completely before reattaching.
- After drying alcohol, attach the side sheet F,R.

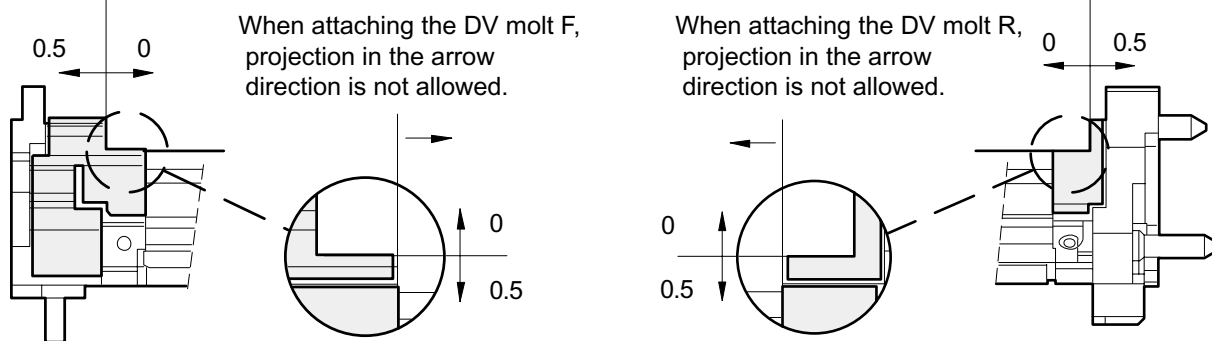
Remove the DV molt F,R and DV molt and clean with alcohol.

After attaching the DV molt F and R, attach the DV molt with the DV molt R edge as the reference.



- Do not allow clearance between DV molt and DV molt F. (Pull and attach them. Overlap may be allowed.)

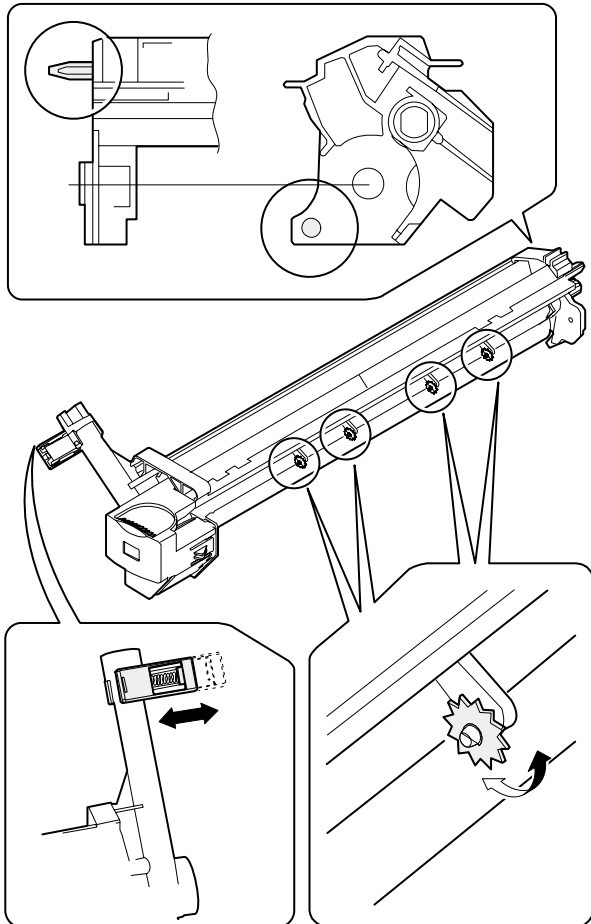
- Remove glue completely before reattaching.
- After drying alcohol, attach the DV side sheet.



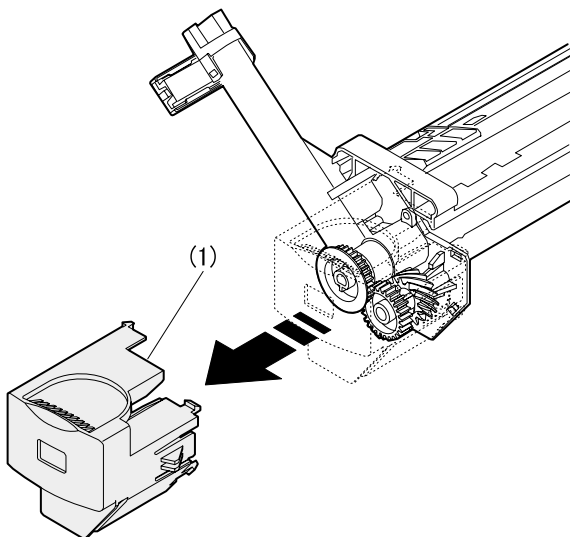
B. Drum unit

1) Check the external view.

- Check for damage or cracks on the boss and the boss hole.
- Check to insure that the waste toner pipe shutter slides smoothly.
- Check to insure that the star ring and the CRU washer rotate smoothly.

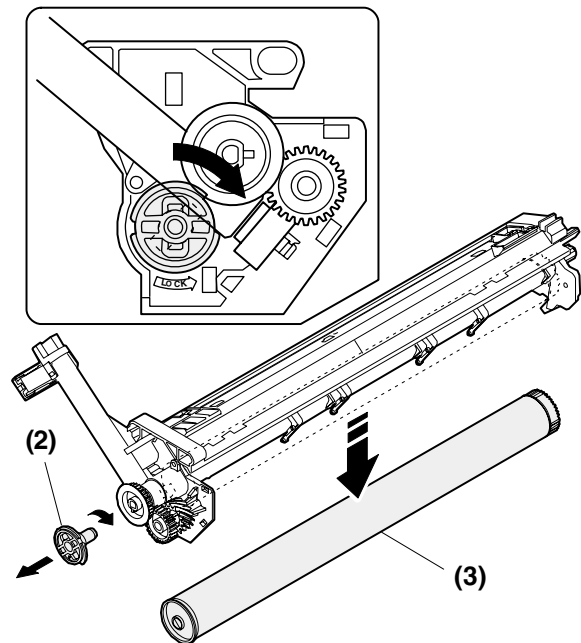


2) Remove the drum cover. (4 Lock Tabs)



3) Remove the drum fixing plate and the photoconductor drum.

(Note) Dispose the drum fixing plate which was removed.

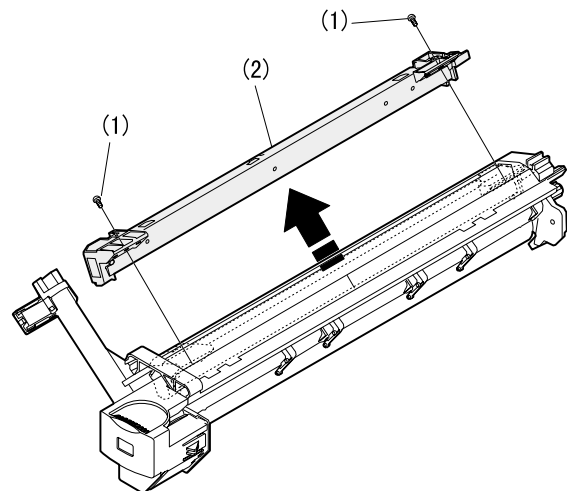


4) Check the cleaning blade and the red felt for no damage.

- If there is any damage, execute all procedures from item 5) and later.
- If there is no damage, execute the procedure of item 12).

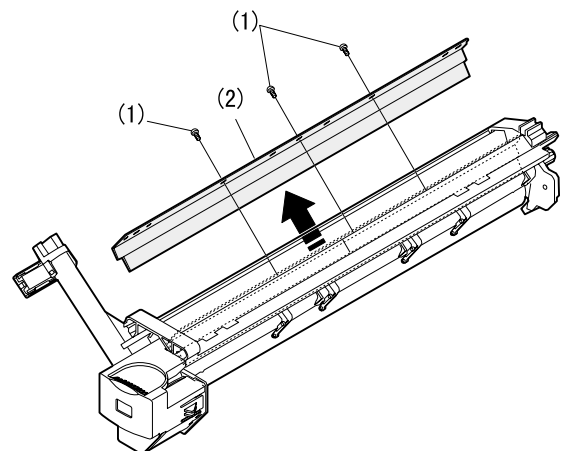
5) Remove the main charger.

(Cleaning the screen grid and the sawteeth.)

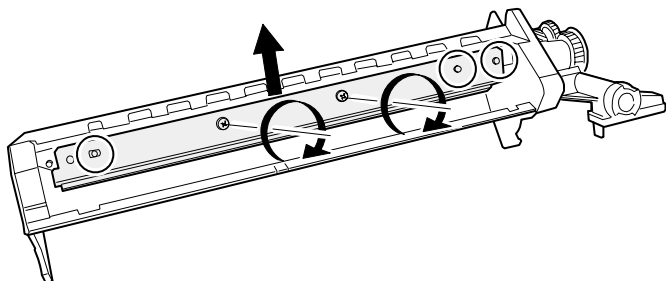


6) Remove the cleaning blade.

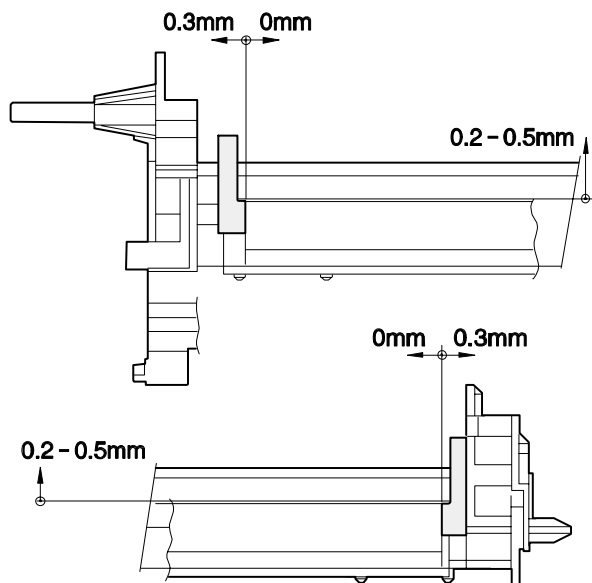
Note: Dispose the cleaning blade which was removed.



- 7) Clean the cleaning section and the waste toner pipe to remove waste toner completely with a vacuum cleaner.
- 8) Remove the felt and duplex tape completely.
Note: Be careful not to scratch or bend the sub blade.
- 9) Attach the cleaning blade.
Securely insert the plate section of the cleaning blade into the dove and fix it with a screw.
Do not touch the cleaning blade rubber with your hand.
When attaching the cleaning blade, press the cleaning blade in the arrow direction and attach.



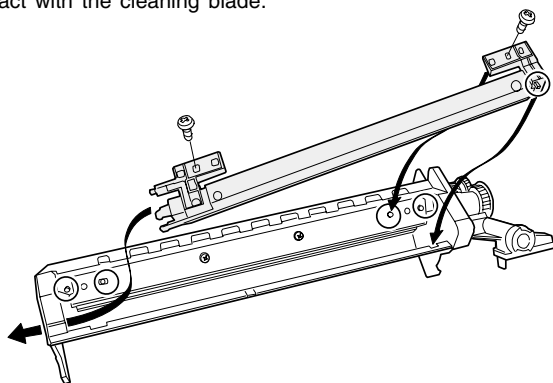
- 10) Attach the felt.



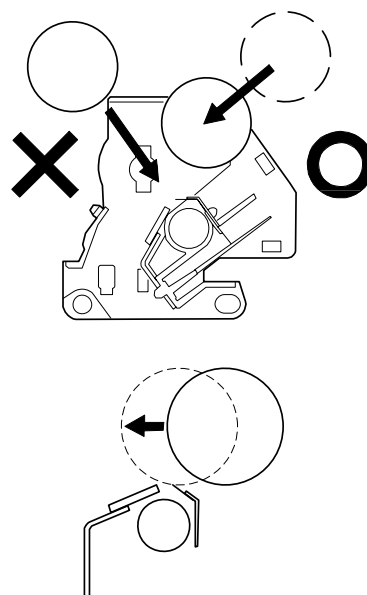
Attach the mocket with slightly pressing section A of the cleaning blade.
Do not touch the tip of the cleaning blade.
Do not put the mocket under the cleaning blade.
Do not put the mocket on the sub blade.
Do not press the sub blade with the mocket.

- 11) Attach the main charger.

Securely set the MC holder on the projection of the process frame.
Securely insert two projections of the MC holder into the groove in the process frame.
When attaching the MC holder ass'y, be careful not to make contact with the cleaning blade.



- 12) Attach the drum fixing plate and the photoconductor drum.
Apply grease to the inside of the photoconductor drum. (Dia. 2)



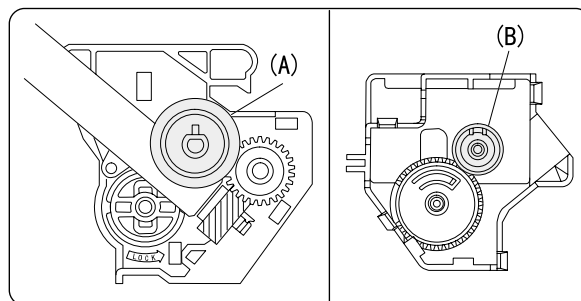
Attach the drum from (b). (Prevention against the sub blade edge breakage)

Attach the drum so that its position with the sub blade is as shown.

- 13) Attach the detection gear.

Note:

- The detection gear is not installed to the drum cartridge packed with the main body. Add a new one.



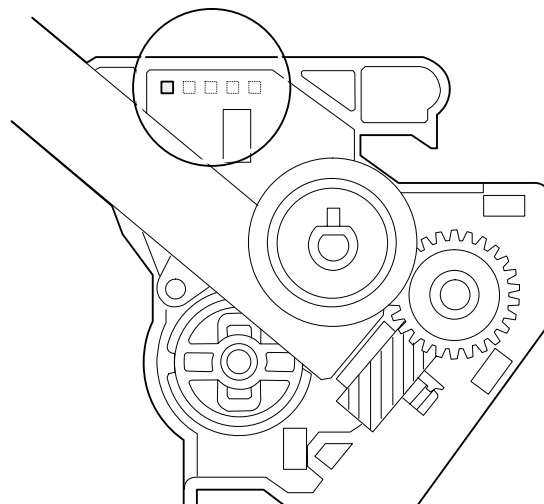
- 14) Attach the drum cover.

Note: After attaching the drum cover, do not make a copy.

When attaching the drum cover, engage the detection gear 20T rib with the 30T gear rib, and attach the drum cover to the process frame.

- 15) Mark the number of times of recycling on the side of the cover with white paint.

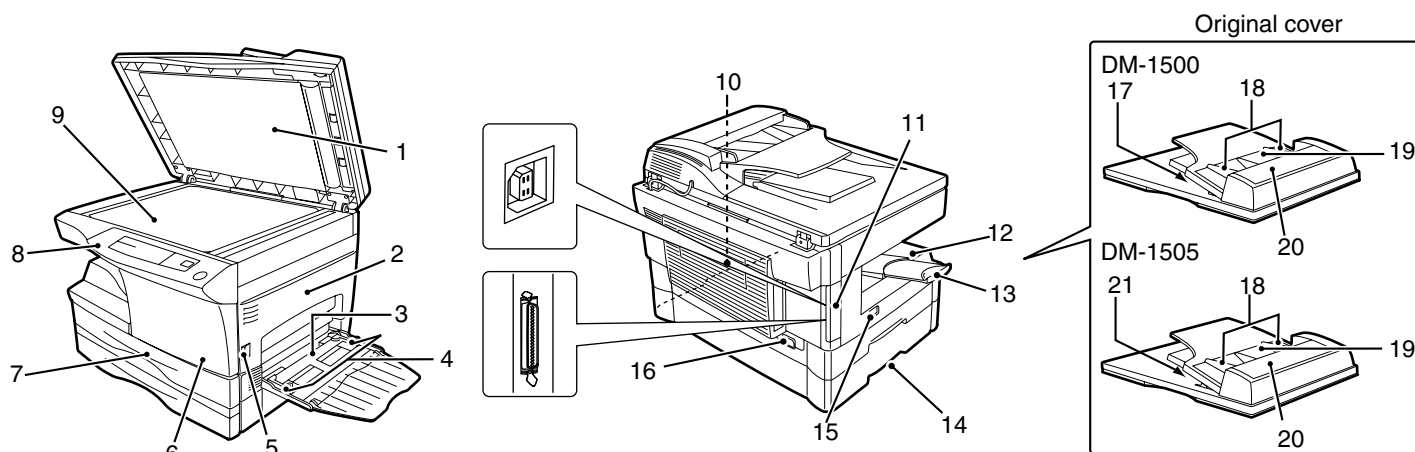
Max. times of recycling: 5 times



Note: Another method of cleaning the drum counter is available with SIM 24-07.

[4] EXTERNAL VIEWS AND INTERNAL STRUCTURES

1. Appearance

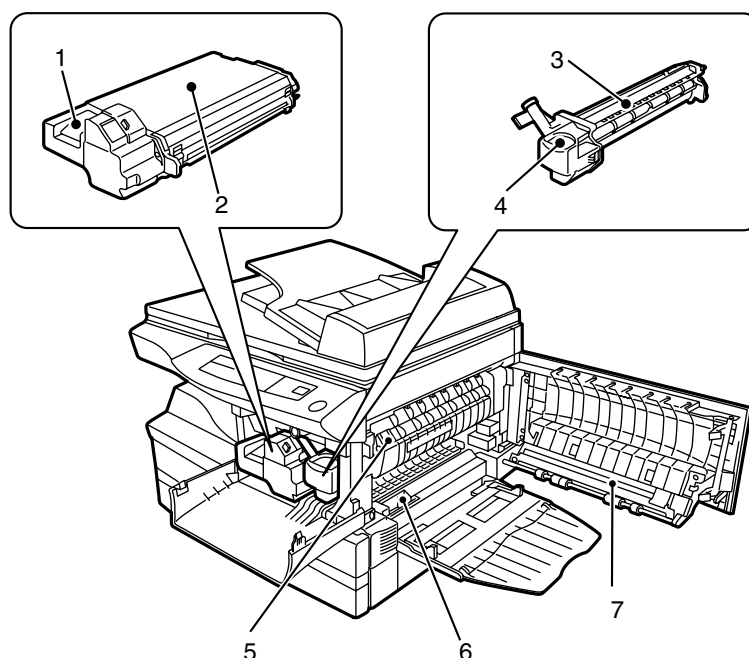


1	Original cover	2	Side cover	3	Bypass tray
4	Bypass tray guides	5	Side cover open button	6	Front cover
7	Paper tray	8	Operation panel	9	Original table
10	Handle	11	PCL printer interface	12	Paper output tray
13	Paper output tray extension	14	Handle	15	Power switch
16	Power cord socket	17	SPF exit area *1	18	Original guides
19	Document feeder tray	20	Feeding roller cover	21	RSPF exit area *2

*1 DM-1500 only

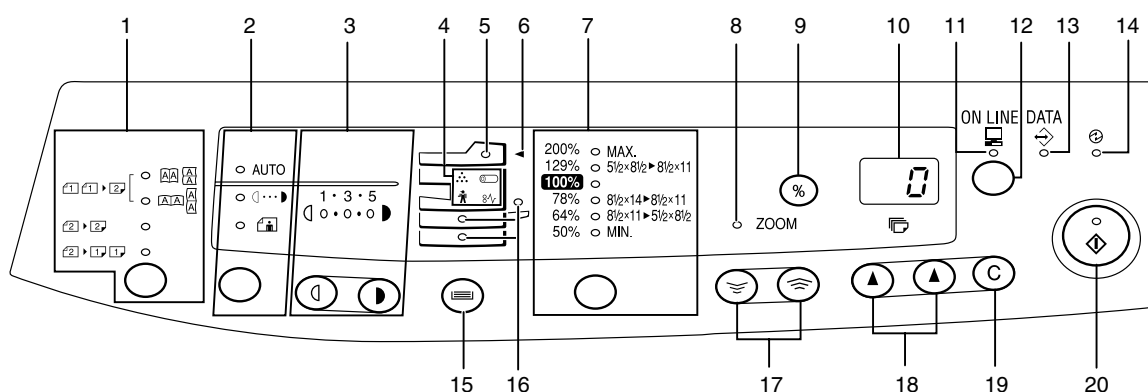
*2 DM-1505 only

2. Internal



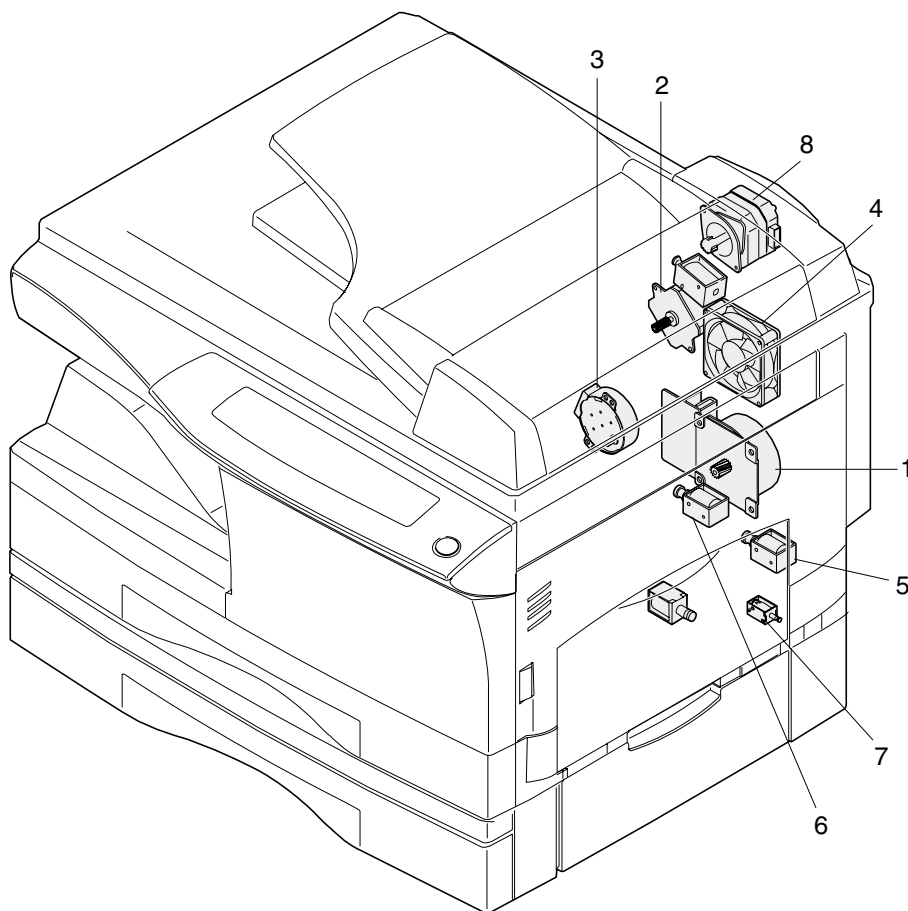
1	TD cartridge lock release button	2	TD cartridge	3	Drum cartridge
4	Drum cartridge handle	5	Fusing unit release lever	6	Charger cleaner
7	Transfer charger				

3. Operation panel



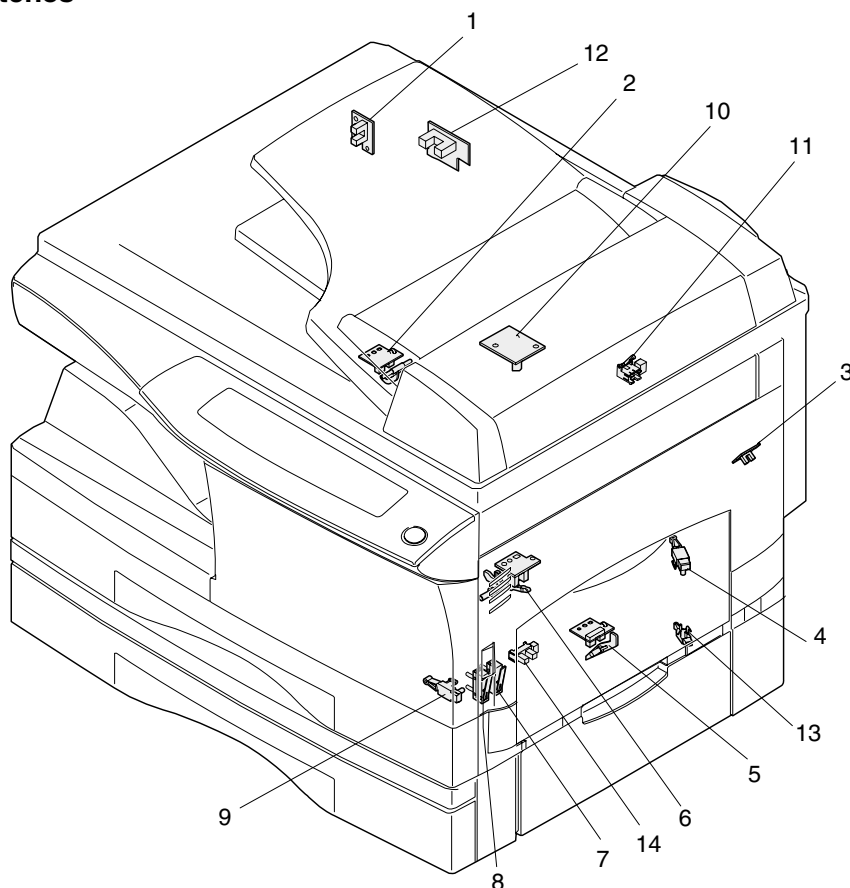
1	Duplex Mode select key and indicator (DM-1505 only)	2	Exposure mode selector key and indicators Use to sequentially select the exposure modes: AUTO, MANUAL or PHOTO. Selected mode is shown by a lit indicator.
3	Light and dark keys and exposure indicators Use to adjust the MANUAL or PHOTO exposure level. Selected exposure level is shown by a lit indicator. Use to start and terminate user program setting.	4	Alarm indicators ○: Drum replacement required indicator 8/11: Misfeed indicator ⋯: TD cartridge replacement required indicator ✱: Maintenance indicator
5	SPF indicator	6	SPF misfeed indicator
7	Copy ratio selector key and copy ratio indicators Use to sequentially select preset reduction/enlargement copy ratios. Selected copy ratio is shown by a lit indicator.	8	Zoom indicator
9	Copy ratio display (%) key	10	Display Displays the specified copy quantity, zoom copy ratio, user program code, and error code.
11	ON LINE indicator / ON LINE KEY Lights up when the machine is used as a printer. To use as a printer, an optional printer expansion kit is needed.	12	ON LINE key Changes between the on-line and off-line modes.
13	DATA indicator Indicates that the printer is receiving or processing print data	14	Power save indicator Lights up when the copier is in a power save mode.
15	Tray select key Use to select a paper feed station (paper tray or bypass tray).	16	Paper feed location indicators Light up to show the selected paper feed station.
17	Zoom keys Use to select any reduction or enlargement copy ratio from 50% to 200% in 1% increments.	18	Copy quantity keys • Use to select the desired copy quantity (1 to 99). • Use to make user program entries.
19	Clear key • Press to clear the display, or press during a copy run to terminate copying. • Press and hold down during standby to display the total number of copies made to date.	20	Print key and ready indicator • Copying is possible when the indicator is on. • Use to set a user program.

4. Motors and solenoids



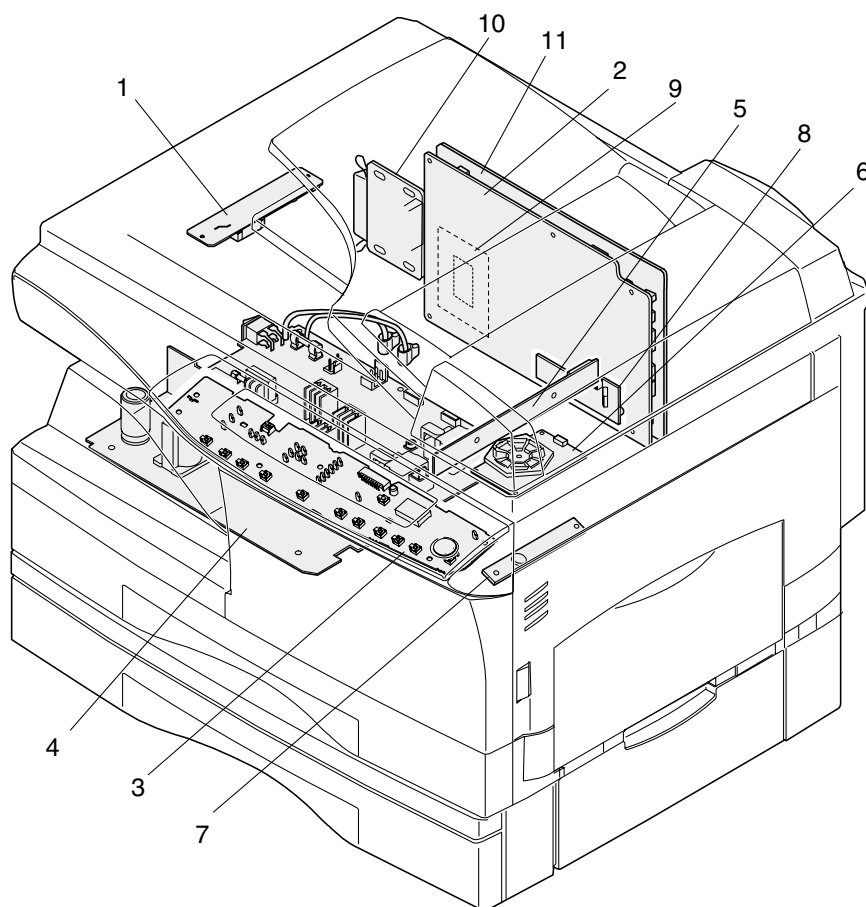
No.	Part name	Control signal	Function,operation
1	Main motor	MM	Drives the copier.
2	Mirror motor	MRMT	Drives the optical mirror base (scanner unit).
3	Toner motor	TM	Supplies toner.
4	Cooling fan motor	VFM	Cools the optical section.
5	Resist roller solenoid	RRS	Resist roller rotation control solenoid
6	Paper feed solenoid	CPFS1	Cassette Paper feed solenoid
7	Multi paper feed solenoid	MPFS	Multi manual pages feed solenoid
8	SPF motor	SPFM	Drives the single pass feeder

5. Sensors and switches



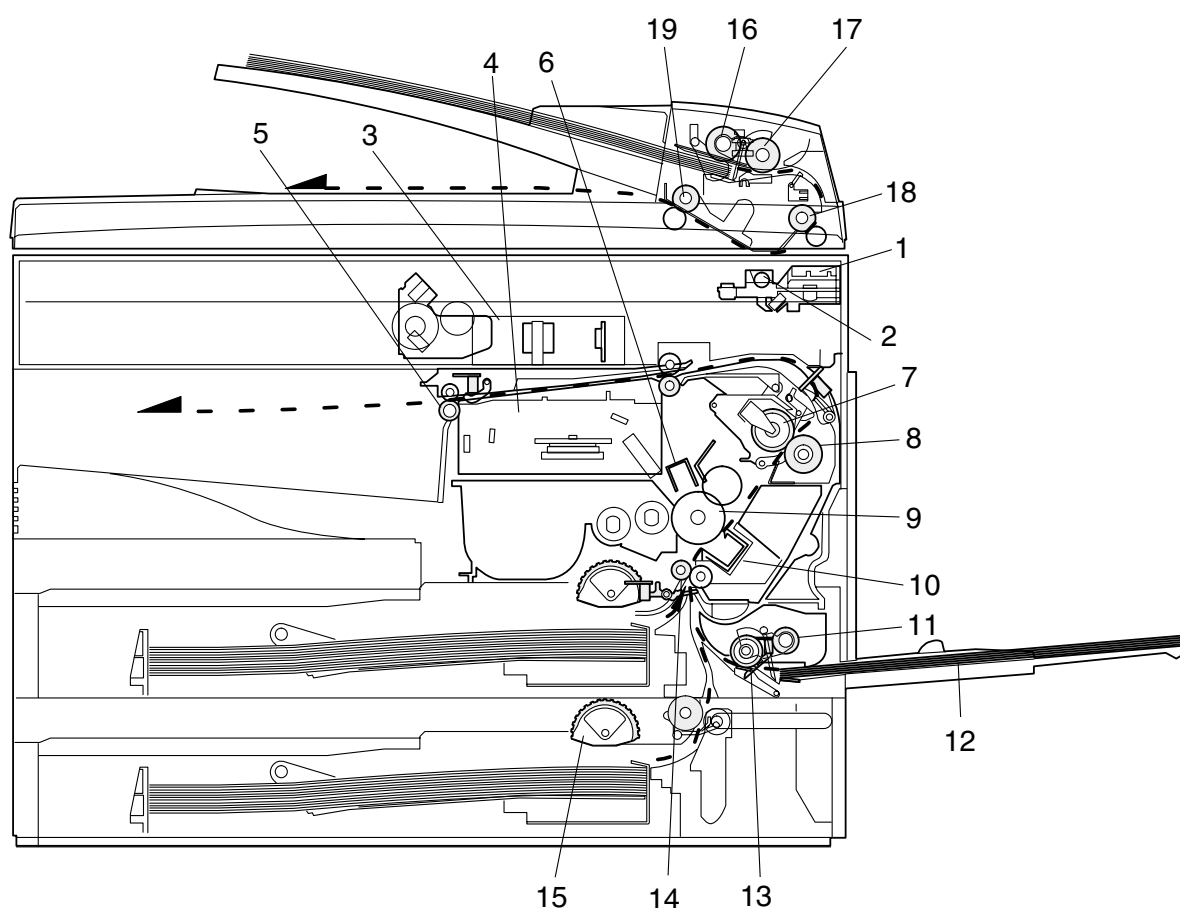
No.	Name	Signal	Type	Function	Output
1	Mirror home position sensor	MHPS	Transmission sensor	Mirror (scanner unit) home position detection	"H" at home position
2	POD sensor	POD	Transmission sensor	Paper exit detection	"H" at paper pass
3	PPD2 sensor	PPD2	Transmission sensor	Paper transport detection 2	"L" at paper pass
4	Cassette detection switch	CED1	Microswitch	Cassette installation detection	"H" at cassette insertion
5	Manual feed detection switch	MFD	Transmission sensor	Manual feed paper detection (single only)	"L" at paper detection
6	PPD1 sensor	PPD1	Transmission sensor	Paper transport detection 1	"L" at paper pass
7	Door switch	DSW	Micro switch	Door open/close detection (safety switch for 5V)	1 or 0V of 5V at door open
8	Door switch	DSW	Micro switch	Door open/close detection (safety switch for 24V)	1 or 0V of 24V at door open
9	Drum reset switch	DRST	Micro switch	New drum detection switch	Instantaneously "H" at insertion of new drum
10	SPF sensor	SPID/SD SW	Transmission sensor	Paper entry detection Cover open/close detection	"L" at paper pass
11	SPPD sensor	SPPD	Transmission sensor	Paper transport detection	"L" at paper pass
12	SDOD sensor	SDOD	Transmission sensor	SPF open/close detection Book sensor	"L" at paper pass
13	2nd cassette	DSW	Micro switch	2nd cassette door open detection	1 or 0V of 5V at door open
14	PPD3 sensor	PPD3	Transmission sensor	Paper transport detection 3	"L" at paper pass

6. PWB unit



No.	Name	Function
1	Exposure lamp inverter PWB	Exposure lamp (Xenon lamp) control
2	Main PWB (MCU)	Copier control
3	Operation PWB	Operation input/display
4	Power PWB	AC power input, DC voltage control, High voltage control
5	CCD sensor PWB	For image scanning
6	LSU motor PWB	For polygon motor drive
7	TCS PWB	For toner sensor control
8	LSU PWB	For laser control
9	Memory PWB 6MB	For memorying data
10	I/F PWB	I/F PWB between PCL and PC
11	PCL control PWB	PCL printer control

7. Cross sectional view



No.	Part name	Function and operation
1	Scanner unit	Illuminates the original with the copy lamp and passes the reflected light to the lens unit (CCD).
2	Exposure lamp	Exposure lamp (Xenon lamp) Illuminates original
3	Lens unit	Scans the original image with the lens and the CCD.
4	LSU (Laser unit)	Converts the original image signal into laser beams and writes onto the drum.
5	Paper exit roller	Roller for paper exit
6	Main charger	Provides negative charges evenly to the drum surface.
7	Heat roller	Fuses toner on the paper. (Teflon roller)
8	Pressure roller	Fuses toner on the paper. (Silicon rubber roller)
9	Drum	Forms images.
10	Transfer unit	Transfers images onto the drum.
11	Pickup roller	Picks up the manual feed paper. (In multi feed only)
12	Manual paper feed tray	Tray for manual feed paper
13	Manual paper feed roller	Transport the paper from the manual paper feed port.
14	PS roller unit	Takes synchronization between the lead edge and the rear edge of the paper.
15	Paper feed roller	Picks up a sheet of paper from the cassette.
16	Pickup roller	Picks up documents.
17	Separation roller	Separates documents to feed properly.
18	PS roller	Feeds documents to the scanning section.
19	Paper exit roller	Discharges documents.

[5] UNPACKING AND INSTALLATION

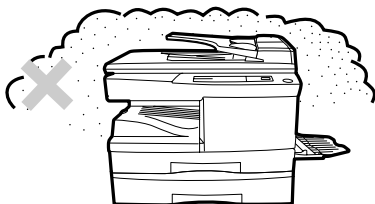
1. COPIER INSTALLATION

Improper installation may damage the copier. Please note the following during initial installation and whenever the copier is moved.

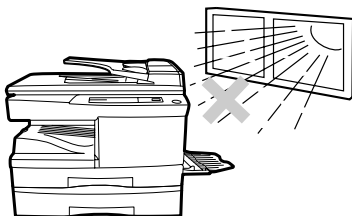
Caution: If the copier is moved from a cool place to a warm place, condensation may form inside the copier. Operation in this condition will cause poor copy quality and malfunctions. Leave the copier at room temperature for at least 2 hours before use.

Do not install your copier in areas that are:

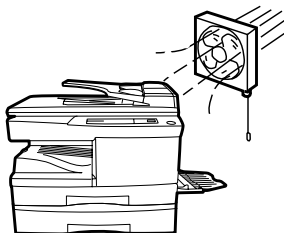
- damp, humid, or very dusty



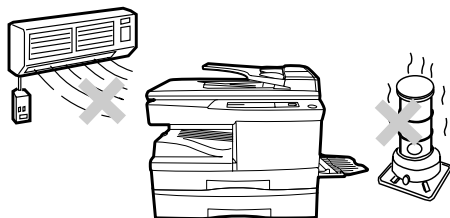
- exposed to direct sunlight



- poorly ventilated



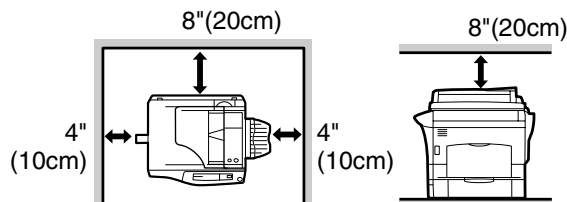
- subject to extreme temperature or humidity changes, e.g., near an air conditioner or heater.



The copier should be installed near an accessible power outlet for easy connection.

Be sure to connect the power cord only to a power outlet that meets the specified voltage and current requirements. Also make certain the outlet is properly grounded.

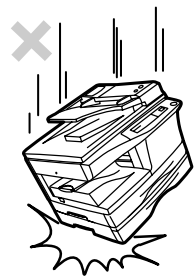
Be sure to allow the required space around the machine for servicing and proper ventilation.



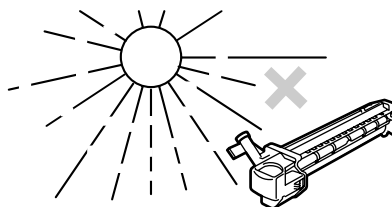
2. CAUTIONS ON HANDLING

Be careful in handling the copier as follows to maintain the performance of this copier.

Do not drop the copier, subject it to shock or strike it against any object.



Do not expose the drum cartridge to direct sunlight. Doing so will damage the surface (green portion) of the drum cartridge, causing poor print quality.



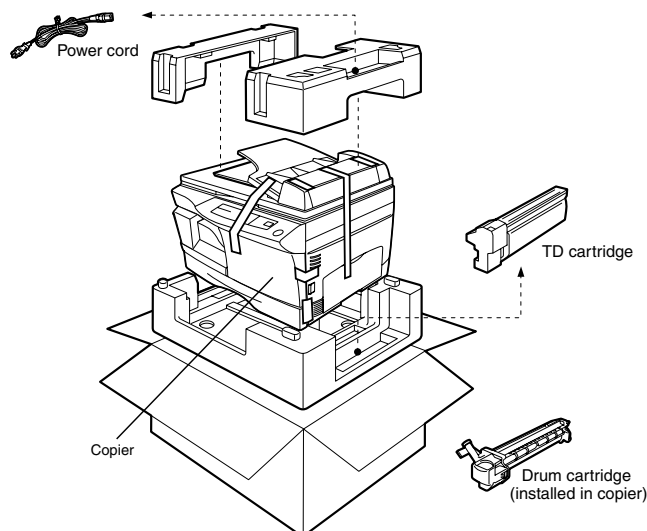
Store spare supplies such as drum cartridges and TD cartridges in a dark place without removing from the package before use.

If they are exposed to direct sunlight, poor print quality may result.

Do not touch the surface (green portion) of the drum cartridge. Doing so will damage the surface of the cartridge, causing poor print quality.

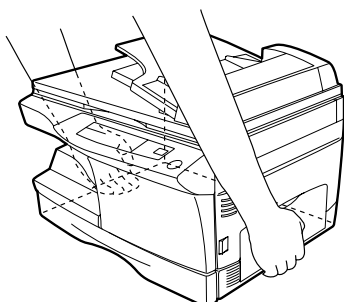
3. CHECKING PACKED COMPONENTS AND ACCESSORIES

Open the carton and check if the following components and accessories are included.



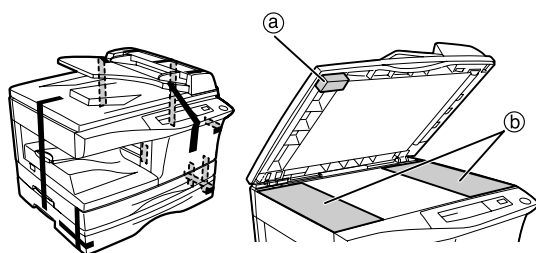
4. UNPACKING

Be sure to hold the handles on both sides of the copier to unpack the copier and carry it to the installation location.

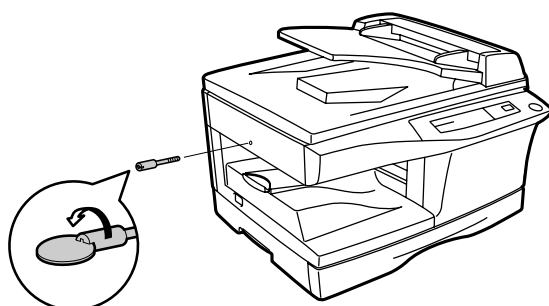


5. REMOVING PROTECTIVE PACKING MATERIALS

- 1) Remove pieces of tape and protective cover. Then open the original cover and remove protective materials (a) and (b).



- 2) Use a coin (or suitable object) to remove the screw. Store the screw in the paper tray because it will be used if the copier has to be moved.

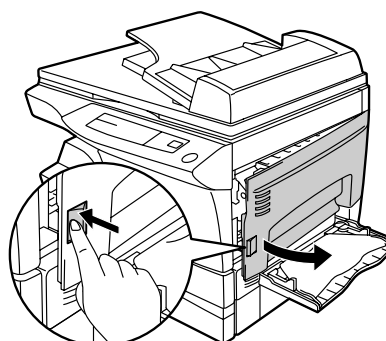


6. INSTALLING THE TD CARTRIDGE

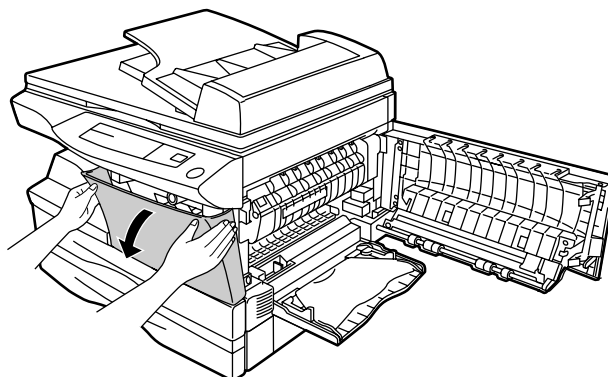
The TD cartridge replacement required (⚡) indicator will light up when toner is needed. If copying is continued while the ⚡ indicator is lit, copies will gradually become lighter until the copier stops and the indicator begins blinking. Replace the old TD cartridge by following the procedure given below.

Note:

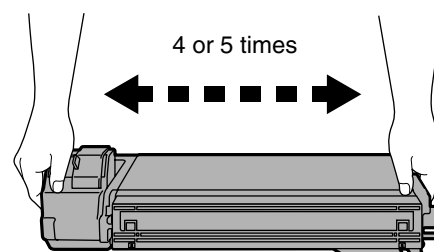
- After the copier stops, it may be possible to make a few more copies by taking the TD cartridge out of the copier, shaking it horizontally, then reinstalling it. If copying is not possible after this operation, replace the TD cartridge.
 - During long copy run of a dark original, the ready (Ⓢ) indicator may blink, the ⚡ indicator light up, and the copier stop, even though toner is left. The copier will feed toner up to 2 minutes and then the ready (Ⓢ) indicator will light up. Press the print (Ⓢ) key to restart copying.
- 1) Ensure that the bypass tray is open and then open the side cover while pressing the side cover open button.



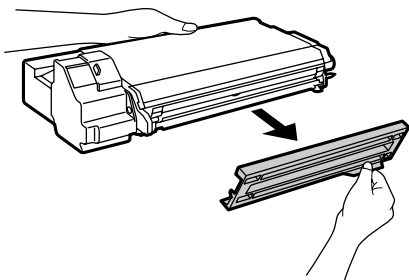
- 2) Remove the CAUTION tape from the front cover and remove the two protective pins from the fusing unit by pulling the strings upward one at a time.
- 3) Push gently on both sides of the front cover to open the cover.



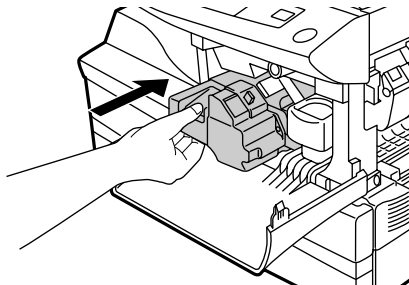
- 4) Remove the TD cartridge from the bag. Remove the protective paper. Hold the cartridge on both sides and shake it horizontally four or five times.



- 5) Hold the tab of the protective cover and pull the tab to remove the cover.

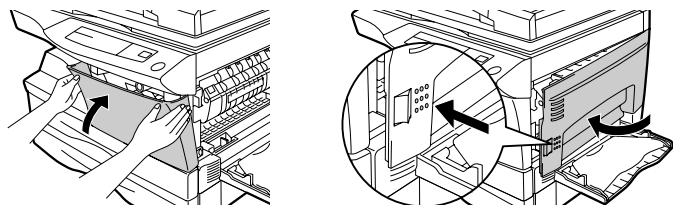


- 6) Gently insert the TD cartridge until it locks in place.



- 7) Close the front cover and then the side cover by pressing the round projections near the side cover open button. The  indicator will go out and the ready () indicator will light up.

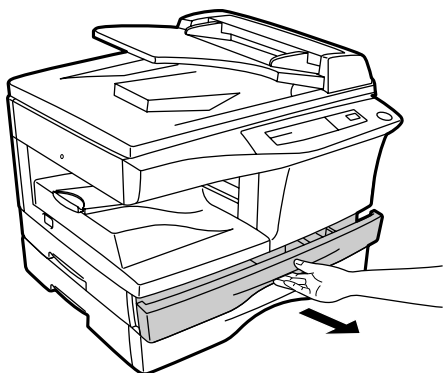
Note: When closing the covers, be sure to close the front cover securely and then close the side cover. If the covers are closed in the wrong order, the covers may be damaged.



7. LOADING COPY PAPER

Note: This copier is equipped with two paper trays. Load copy paper into the two paper trays.

- 1) Raise the handle of the paper tray and pull the paper tray out until it stops.

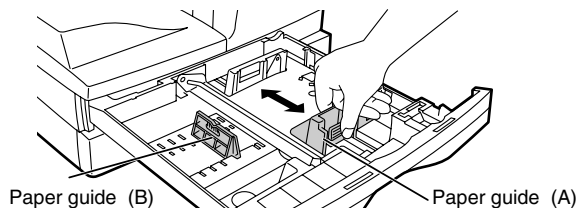


- 2) Remove the pressure plate lock. Rotate the pressure plate lock in the direction of the arrow to remove it while pressing down the pressure plate of the paper tray.
- 3) Store the pressure plate lock which has been removed in step 2 and the screw which has been removed when unpacking in the front of the paper tray. To store the pressure plate lock, rotate the lock to fix it on the relevant location.

- 4) Adjust the paper guides on the paper tray to the copy paper width and length.

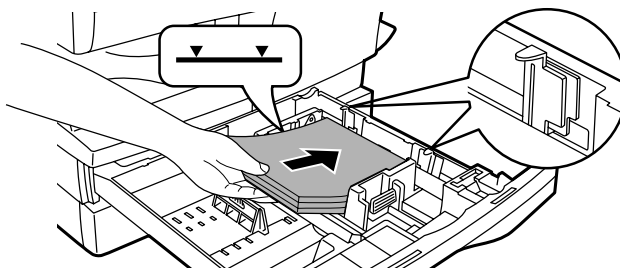
Squeeze the lever of paper guide (A) and slide the guide to match with the width of the paper.

Move paper guide (B) to the appropriate slot as marked on the tray.



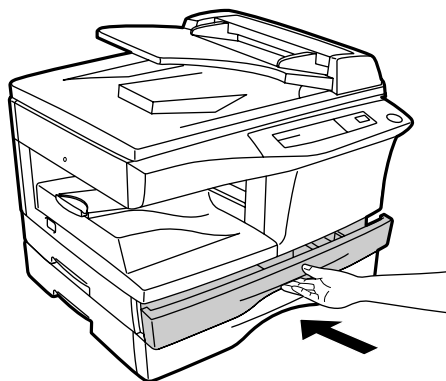
- 5) Fan the copy paper and insert it into the tray. Make sure the edges go under the corner hooks.

Note: Do not load paper above the maximum height line (). Exceeding the line will cause a paper misfeed.



- 6) Gently push the paper tray back into the copier.

Note: After loading copy paper, to cancel the blinking "P" without restarting copying, press the clear () key. The "P" in the display will go out and the ready () indicator will light up.



8. POWER TO COPIER

- 1) Ensure that the power switch of the copier is in the OFF position. Insert the attached power cord into the power cord socket at the rear of the copier.
- 2) Plug the other end of the power cord into the nearest outlet.

9. INSTALLING THE PRINTER DRIVER

(Description of the printer driver)

The printer driver is the software program which runs the printer. It converts the data in your file into information that the printer can understand. It also controls communication between the printer and computer as the data is printed.

(Checking the hardware and software requirements)

You will need the following hardware and software in order to install the printer driver.

Computer type	IBM PC/AT or compatible computer equipped with a bi-directional parallel or USB interface, and CD-ROM drive
Windows type	Windows 3.1x, Windows 95, Windows 98*, Windows NT 4.0 * USB is supported on Windows 98 preinstalled only.
CPU	486DX 66MHz or better
Physical RAM	Windows 95, Windows 3.1x: 8MB (16MB or more is recommended.) Windows NT 4.0: 12MB (16MB or more is recommended.) Windows 98: 16MB (32MB or more is recommended.)
Display	640 × 480 dots (VGA) or better
Hard disk free space	10MB or more

Caution: The printer driver included in this product cannot be used under Windows NT 3.5x, OS/2, pure MS-DOS and other operating systems which are not described above.

Note: The PCL6 printer driver is not available in Windows 3.1 environment.

(Installing the printer driver)

The software for your printer is provided on CD-ROM.

Before installing the printer driver, be sure to check the following items.

- Is the printer connected properly to the computer?
- Does the printer have paper?

A. Windows 95/Windows NT 4.0 Installation Instructions:

With both the computer and the printer turned off, connect the printer to the computer with a parallel interface cable.

- 1) Load paper into the paper tray of the printer. For instructions on loading paper, see the section LOADING COPY PAPER in the copier operation manual.
- 2) Turn on the printer.
- 3) Turn on your computer and start Windows.

Note: Before installing the printer driver, be sure to close all other applications which may be open.

- 4) When using Windows 95 on a personal computer with plug & play*, the "Update Device Driver Wizard" window will appear. Insert the installation CD-ROM into the CD-ROM drive. Click the Next button and follow the on-screen instructions. If the "Copying Files" window appears during this operation, enter R:\ (if the CD-ROM is designated as drive R), click the OK button and follow the on-screen instructions.



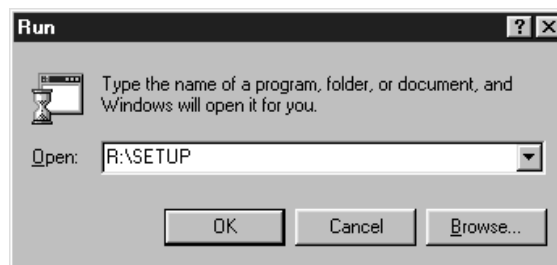
- If you use Windows 95 and the "New Hardware Found" window will appear, select Driver from Disk Provided by Hardware Manufacturer and then click the OK button. Proceed to step 6.
- If you use Windows 95 and the screen shown above or the "New Hardware Found" window does not appear, proceed to step 5.
- If you use Windows NT 4.0, proceed to step 5.

* Plug & play

This feature is effective if both the computer and peripheral equipment are equipped with IEEE 1284 compliant parallel interface.

Note: The screen displayed depends on the version of Windows you are using.

- 5) Insert the installation CD-ROM into the CD-ROM drive. Click the Start button and select Run. When the screen shown below appears, type R:\SETUP (if the CD-ROM is designated as drive R) and click the OK button. Follow the on-screen instructions.



- 6) The "Install From Disk" window will appear. Insert the installation CD-ROM into the CD-ROM drive. Type R:\ (if the CD-ROM is designated as drive R) and click the OK button. Follow the on-screen instructions.



Note: If you have any problem with the test print, check the symptoms and solutions. Print the test page again after resolving the problem.

B. Windows 98:

With both the computer and the printer turned off, connect the printer to the computer with either a parallel or a USB interface cable.

- 1) Load paper into the paper tray of the printer. For instructions on loading paper, see the section LOADING COPY PAPER found in the copier operation manual.
- 2) Turn on the printer.
- 3) Turn on your computer and start Windows.

When using the USB interface:

- Connect your personal computer and the printer using a USB interface cable if you have not already done so. (For information about connecting the USB interface cable)
- When the "Add New Hardware Wizard" window appears, insert the installation CD-ROM, click the Next button, follow the on-screen instructions, and finally click the Finish button.



Note: Before installing the printer driver, be sure to close all other applications which may be open.

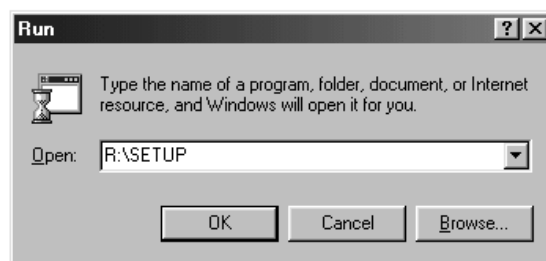
- 4) When using Windows 98 on a personal computer with plug & play*, the "Add New Hardware Wizard" window will appear. Click the Next button and follow the on-screen instructions.
- If the "Add New Hardware Wizard" window does not appear, proceed to step 8.



- 5) Select Search for the best driver for your device and click the Next button.
- 6) Insert the installation CD-ROM into the CD-ROM drive. (If you are using the USB interface, confirm that the installation CD-ROM is in the CD-ROM drive.) Select the CD-ROM drive and click the Next button.



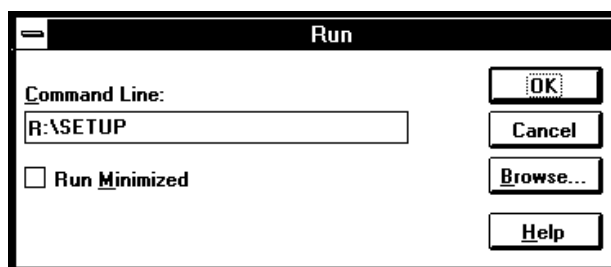
- 7) Windows driver file search will find the device "SHARP AR-150 Series PCL". Click the Next button and follow the on-screen instructions.
- 8) Insert the installation CD-ROM into the CD-ROM drive. (If you are using the USB interface, confirm that the installation CD-ROM is in the CD-ROM drive.) Click the Start button and select Run. When the window shown below appears, type R:\SETUP (if the CD-ROM is designated as drive R) and click the OK button. Follow the on-screen instructions.



C. Windows 3.1x:

With both the computer and the printer turned off, connect the printer to the computer with a parallel interface cable.

- 1) Load paper into the paper tray of the printer. For instructions on loading paper, see the section LOADING COPY PAPER in the copier operation manual.
- 2) Turn on the printer and then start Windows on your computer.
Note: Before installing the printer driver, be sure to close all other applications which may be open.
- 3) Insert the installation CD-ROM into the CD-ROM drive.
- 4) Choose File from the Menu bar in Program Manager, and then choose the Run... command.
- 5) Type R:\SETUP (if the CD-ROM is designated as drive R) in the command line box and then click the OK button.



- 6) Follow the on-screen instructions.

D. AR-150 Series PCL printer driver group

When you install the printer driver, the SHARP AR-150 Series PCL printer driver group is automatically created. The printer driver group includes the following items:

Uninstall AR-150 Series PCL

The printer driver can be uninstalled. If the driver is uninstalled, printing can no longer be performed on the printer.

For proper uninstallation, be sure to use the SHARP uninstall program of the printer driver group.

Readme

The latest information on the printer driver is included in this document. Read the Readme first.

Status Monitor

The Status Monitor window provides visual information about the printer state and current job.

Status Monitor HELP

Assistance and information for Status Monitor.

- Be sure to read the “Readme” document found in the printer driver group before using your SHARP AR-150 Series PCL printer.
- You cannot use both the status monitor and the Print Manager at the same time in Windows 3.1 environment.

12. TEST PRINTING

To test print the configuration page and font list, use the following procedure:

- 1) Press and hold down the light and dark keys simultaneously for more than 5 seconds until all the alarm indicators blink and “--” appears in the display.
- 2) Set “6” (configuration page) or “7” (font list) using the left copy quantity key. The selected number will blink in the left side of the display.
- 3) Press the print key. The entered program number will be steadily lit and the currently selected parameter number for the program will blink on the right side of the display.
- 4) Select the desired parameter using the right copy quantity key. The entered parameter number will blink on the right of the display.

Program No.	Mode	Parameters
6	Configuration page	0 → English 1 → French 2 → Spanish
		3 → Italian 4 → German
7	Font list	0 → English 1 → French 2 → Spanish
		3 → Italian 4 → German

- 5) Press the print key. The test page prints.

Note: To change the setting or to set another mode, press the clear key. The printer will return to step 2.

Configuration Page items

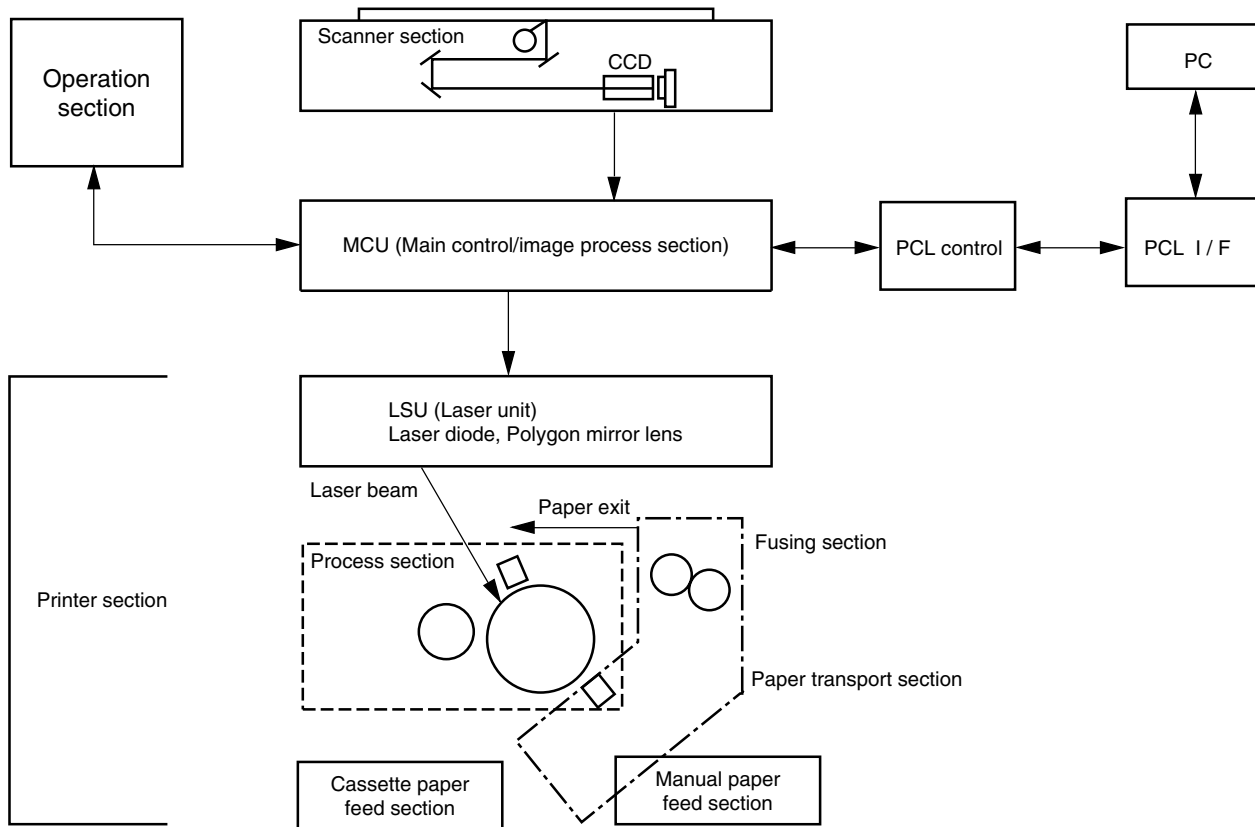
1st level item	2nd level item	3rd level item
Hardware Status	Machine Information	Language
	Hardware Specs	Basic Memory
		Total Memory
	Processor	64 bit RISC
	Interface Menu	I/O Timeout
	ROM Version	
	Total Page Count	
	Version Information	PCL6
	Input Paper Tray	Bypass Tray
		Tray 1
		Tray 2

[6] OPERATIONAL DESCRIPTIONS

1. Outline of operation

The outline of operation is described referring to the basic configuration.

(Basic configuration)



(Outline of copy operation)

Setting conditions

- 1) Set copy conditions such as the copy quantity and the copy density with the operation section, and press the COPY button. The information on copy conditions is sent to the MCU.

Image scanning

- 2) When the COPY button is pressed, the scanner section starts scanning of images.
The light from the copy lamp is reflected by the document and passed through the lens to the CCD.

Photo signal/Electric signal conversion

- 3) The image is converted into electrical signals by the CCD circuit and passed to the MCU.

Image process

- 4) The document image signal sent from the CCD circuit is processed under the revised conditions and sent to the LSU (laser unit) as print data.

Electric signal/Photo signal (laser beam) conversion

- 5) The LSU emits laser beams according to the print data.
(Electrical signals are converted into photo signals.)
- 6) The laser beams are radiated through the polygon mirror and various lenses to the OPC drum.

Printing

- 7) Electrostatic latent images are formed on the OPC drum according to the laser beams, and the latent images are developed to be visible images (toner images).
- 8) Meanwhile the paper is fed to the image transfer section in synchronization with the image lead edge.
- 9) After the transfer of toner images onto the paper, the toner images are fused to the paper by the fusing section. The copied paper is discharged onto the exit tray.

2. Scanner section

A. How to scan documents

The scanner has sensors that are arranged in a line. These sensors scan a certain area of a document at a time and deliver outputs sequentially. When the line is finished, the next line is scanned, and this procedure is repeated. The figure below shows the case where the latter two sections of an image which are scanned are shown with solid lines and the former two sections which are being transmitted are shown with dotted lines.

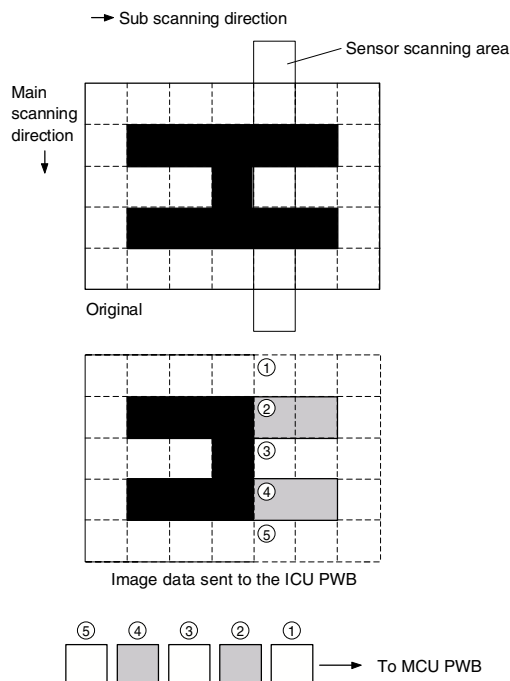
The direction of this line is called “main scanning direction,” and the scanning direction “sub scanning direction.”

In the figure above, one line is divided into 4 sections. Actually, however, one line is divided into thousands of sections. For scanning, the light receiving element called CCD is used.

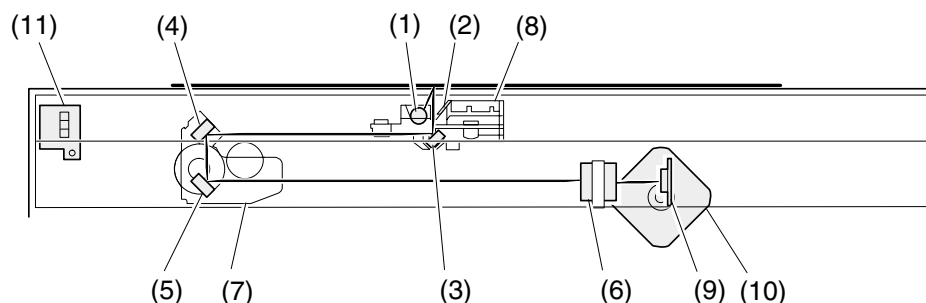
The basic resolution indicates the scanner capacity. The basic resolution is expressed in dpi (dot/inch) which shows the number of light emitting elements per inch on the document.

The basic resolution of this machine is 400dpi.

In the sub scanning direction, at the same time, the motor that drives the optical system is controlled to scan the image at the basic resolution.



B. Basic structure of scanner section



1	Copy lamp (Xenon lamp)	2	Reflector (light conversion plate)	3	No. 1 mirror
4	No. 2 mirror	5	No. 3 mirror	6	Lens
7	No. 2/3 mirror unit	8	Copy lamp unit	9	CCD
10	Mirror motor	11	MHPS (Mirror home position sensor)		

The scanner unit performs scanning in the digital optical system.

The light from the light source (Xenon lamp) is reflected by a document and passed through three mirrors and reduction lenses to the CCD element (image sensor) where images are formed. This system is known as the reduction image sensor system. Photo energy on the CCD element is converted into electrical signals (analog signals). (Photo-electric conversion). The output signals (analog signals) are converted into digital signals (A/D conversion) and passed to the MCU (main control/image process section). The resolution at that time is 400dpi.

The mirror unit in the scanner section is driven by the mirror motor.

The MHPS is provided to detect the home position of the copy lamp unit.

3. Laser unit

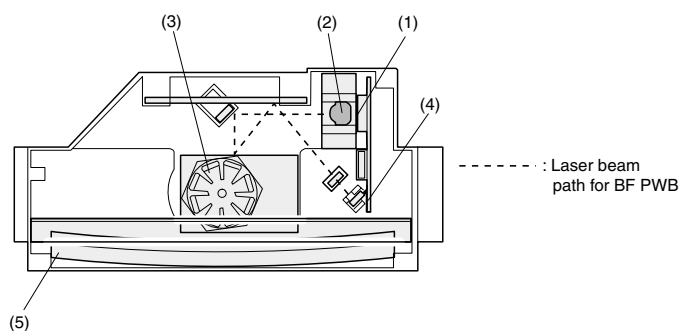
The image data sent from the MCU (image process circuit) is sent to the LSU (laser unit), where it is converted into laser beams.

A. Basic structure

The LSU unit is the writing section of the digital optical system.

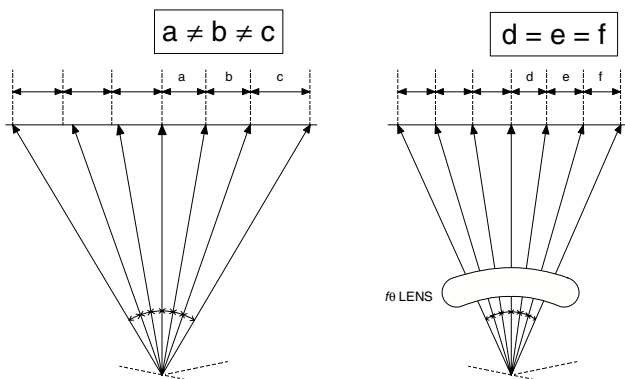
The semiconductor laser is used as the light source, and images are formed on the OPC drum by the polygon mirror and f θ lens, etc.

The laser beams are passed through the collimator lens, the cylindrical lens, the polygon mirror, the f θ lens, and the mirror to form images on the OPC drum in the main scanning direction. The laser emitting PWB is provided with the APC (auto power control) in order to eliminate fluctuations in the laser power. The BF PWB works for measurement of the laser writing start point.

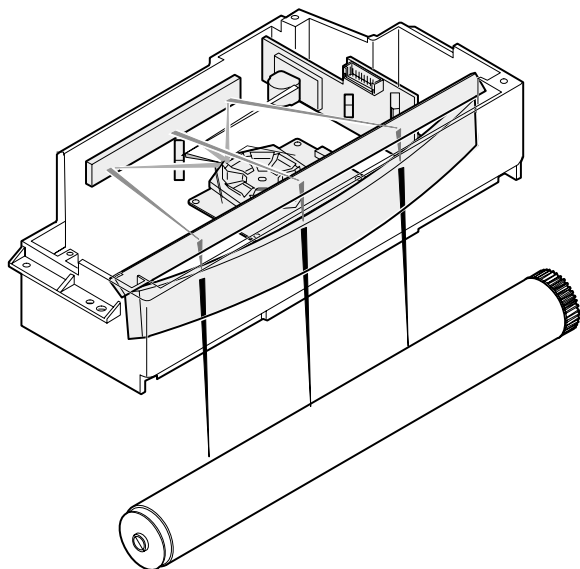


No.	Component	Function
(1)	Semiconductor laser	Generates laser beams.
(2)	Collimator lens	Converges laser beams in parallel.
(3)	Polygon mirror, polygon motor	Reflects laser beams at a constant rpm.
(4)	BD (Mirror, lens, PWB)	Detects start timing of laser scanning.
(5)	f θ lens	Converges laser beams at a spot on the drum.
		Makes the laser scanning speeds at both ends of the drum same as each other. (Refer to the figure below.)

Makes the laser scanning speeds at both ends of the drum same as each other.



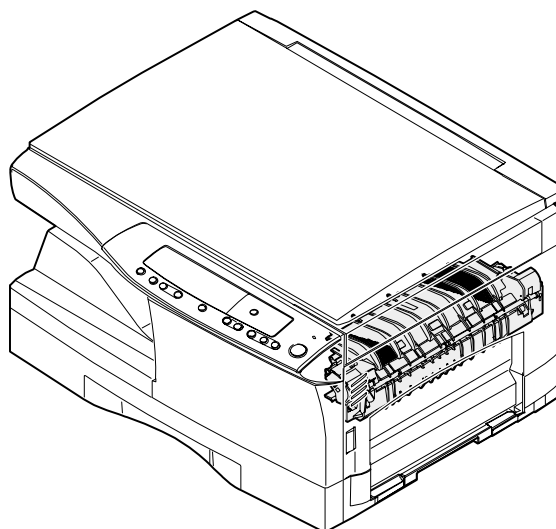
B. Laser beam path



C. Composition

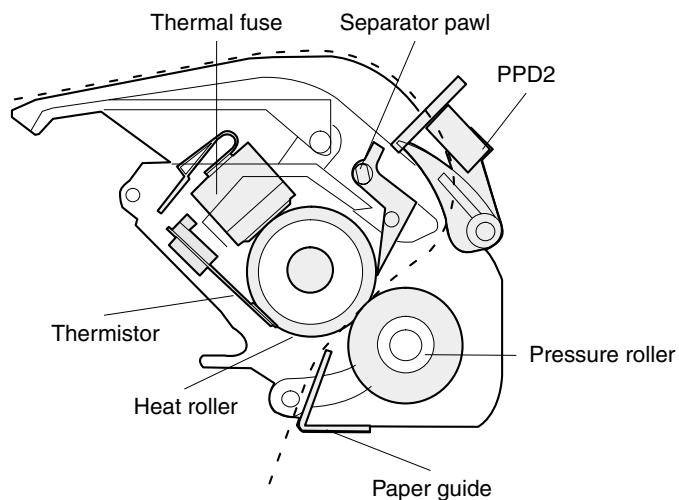
Effective scanning width:	216mm (max.)
Resolution:	600dpi
Beam diameter:	75μm in the main scanning direction, 80μm in the sub scanning direction
Image surface power:	0.20 ±0.03mW (Laser wavelength 780 – 795nm)
Polygon motor section:	Brushless motor 20.787rpm No. of mirror surfaces: 6 surfaces

4. Fuser section

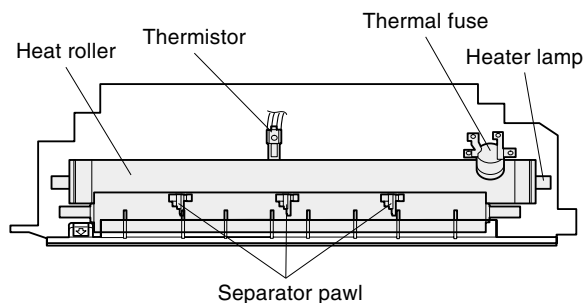


A. General description

General block diagram (cross section)



Top view



(1) Heat roller

A pressure roller is used for the heat roller and a silicone rubber roller is used for the lower heat roller for better toner fusing performance and paper separation.

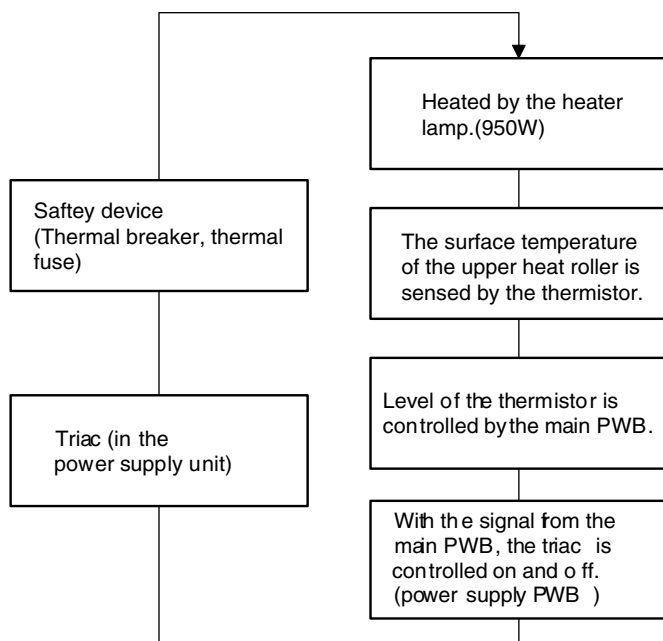
(2) Separator pawl

Three separator pawls are used on the upper heat roller. The separator pawls are teflon coated to reduce friction with the roller and prevent a smear on the paper caused by the separator pawl.

(3) Thermal control

1. The heater lamp, thermistor, main PWB, DC power supply PWB, and triac within the power supply unit are used to control the temperature in the fuser unit.

To prevent against abnormally high temperature in the fuser unit, a thermal breaker and thermal fuse are used for safety purposes.



2. The surface temperature of the upper heat roller is set to 165°C ~ 190°C. The surface temperature during the power save mode is set to 100°C.
3. The self-check function comes active when one of the following malfunctions occurs, and an "H" is displayed on the multicopy window.
 - a. When the heat roller surface temperature rises above 240°C.
 - b. When the heat roller surface temperature drops below 100°C during the copy cycle.
 - c. Open thermistor
 - d. Open thermal fuse
 - e. When the heat roller temperature does not reach 190°C within 27 second after supplying the power.

(4) Fusing resistor

Fusing resistor

This model is provided with a fusing resistor in the fusing section to improve transfer efficiency.

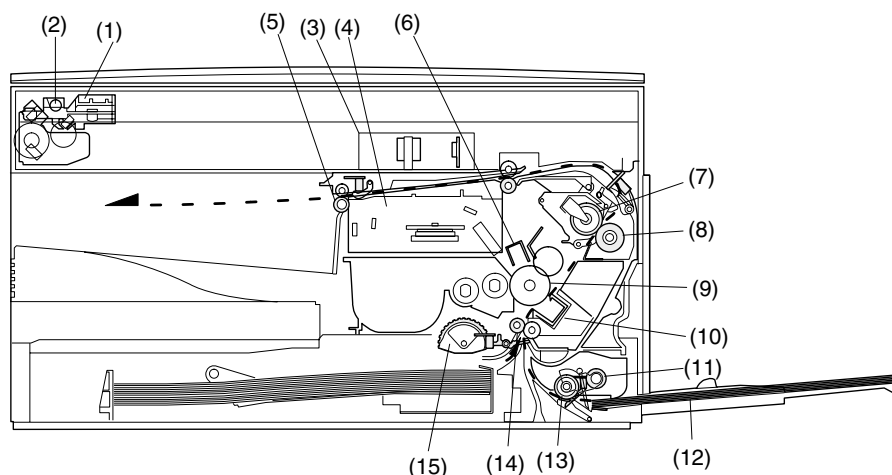
General descriptions are made in the following.

General descriptions

Since the upper heat roller is conductive when copy paper is highly moistured and the distance between the transfer unit and the fusing unit is short, the transfer current leaks through the copy paper, the upper heat roller and the discharging brush.

5. Paper feed section and paper transport section

A. Paper transport path and general operations



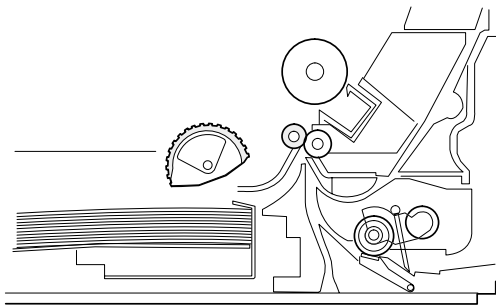
(1)	Scanner unit	(6)	Main charger	(11)	Pickup roller
(2)	Copy lamp	(7)	Heat roller	(12)	Manual paper feed tray
(3)	Lens unit	(8)	Pressure roller	(13)	Manual paper feed roller
(4)	LSU (Laser unit)	(9)	Drum	(14)	PS roller unit
(5)	Paper exit roller	(10)	Transfer unit	(15)	Paper feed roller

Paper feed is made in two ways; the tray paper feed and the manual paper feed. The tray is of universal-type, and has the capacity of 250 sheets. The front loading system allow you to install or remove the tray from the front cabinet.

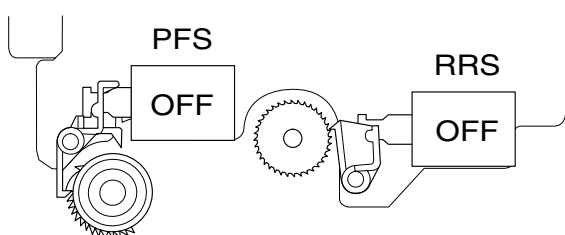
The general descriptions on the tray paper feed and the manual paper feed are given below.

(1) Cassette paper feed operation

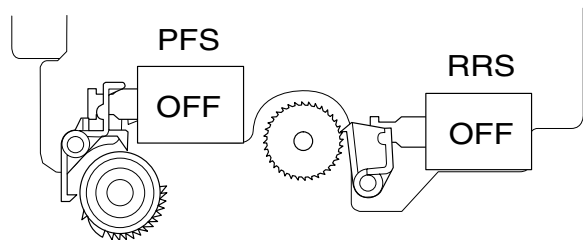
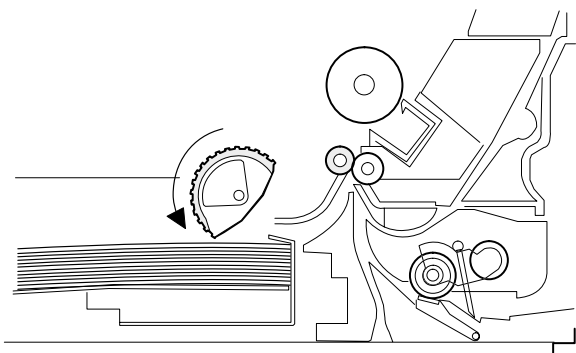
- 1) The figure below shows the positions of the pick-up roller, the paper feed clutch sleeve, and the paper feed latch in the initial state without pressing the COPY button after lighting the ready lamp. The paper feed latch is in contact with the projection of the clutch sleeve.



- 2) When the COPY button is pressed, the main drive motor starts rotating to drive each drive gear. The pick-up drive gear also is driven at that time. Since, however, the paper feed latch is in contact with the projection of the clutch sleeve, rotation of the drive gear is not transmitted to the pick-up roller, which does not rotate therefore.

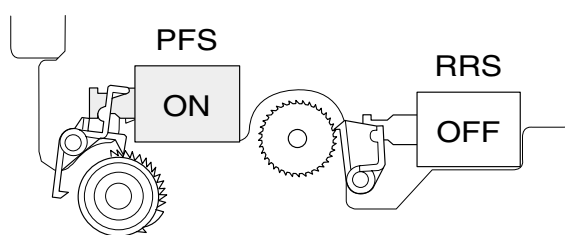
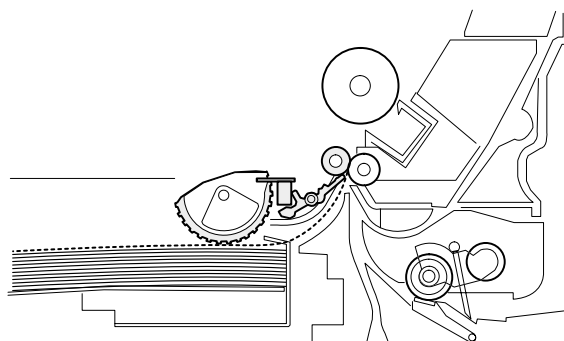


- 3) After about 0.1 sec from when the main motor start rotating, the tray paper feed solenoid (PFS) turns on at a moment. This disengages the paper feed latch from the projection of the clutch sleeve, transmitting rotation of the pick-up drive gear to the paper feed roller shaft, rotating the pick-up roller to feed the paper.

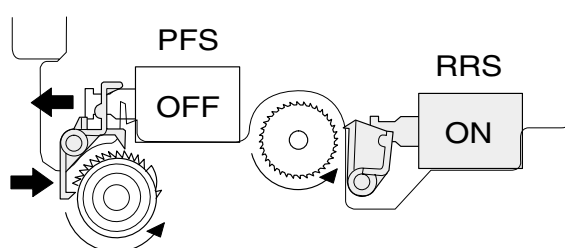
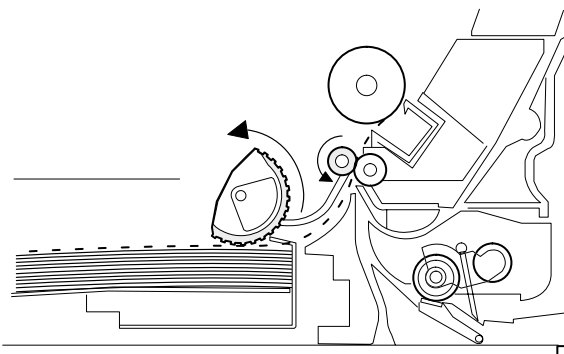


- 4) After more than half rotation of the pick-up roller, the paper feed latch is brought in contact with the projection of the clutch sleeve, stopping rotation of the pick-up roller.

- 5) At this time, the paper is fed passed the paper entry detection switch (PPD1), and detected by it. After about 0.15 sec from detection of paper by PPD1, the tray paper feed solenoid (PFS) turns on so that the clutch sleeve projection comes into contact with the paper feed latch to stop the pick-up roller. Then the pick-up roller rotates for about 0.15 sec so that the lead edge of the paper is evenly pressed on the resist roller, preventing against skew feeding.



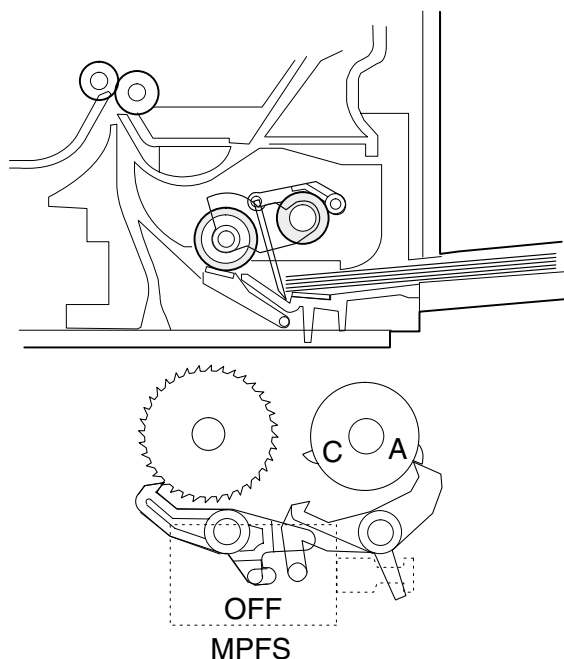
- 6) To release the resist roller, the tray paper feed solenoid and the resist solenoid are turned on by the paper start signal to disengage the resist start latch from the clutch sleeve projection, transmitting rotation of the resist drive gear to the resist roller shaft. Thus the paper is transported by the resist roller.
- 7) After the resist roller starts rotating, the paper is passed through the pre-transfer guide to the transfer section. Images are transferred on the paper, which is separated from the OPC drum by the drum curve and the separation section.



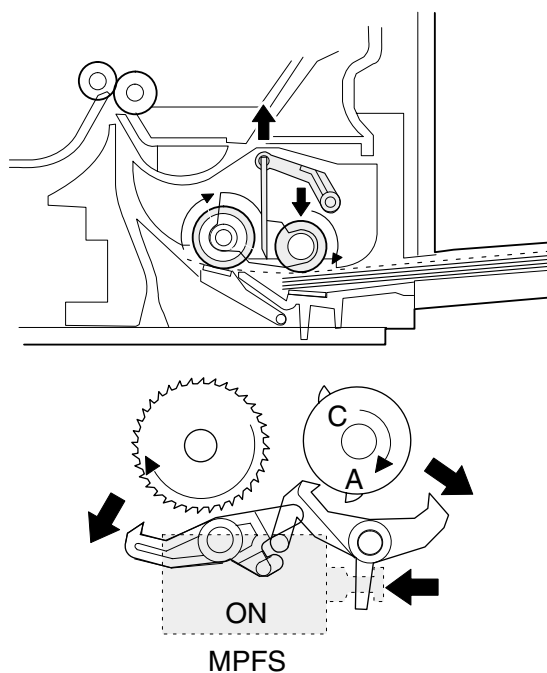
- 8) The paper separated from the drum is passed through the fusing paper guide, the heat roller (fusing section), POD (paper out detector) to the copy tray.

(2) Manual multi paper feed operation

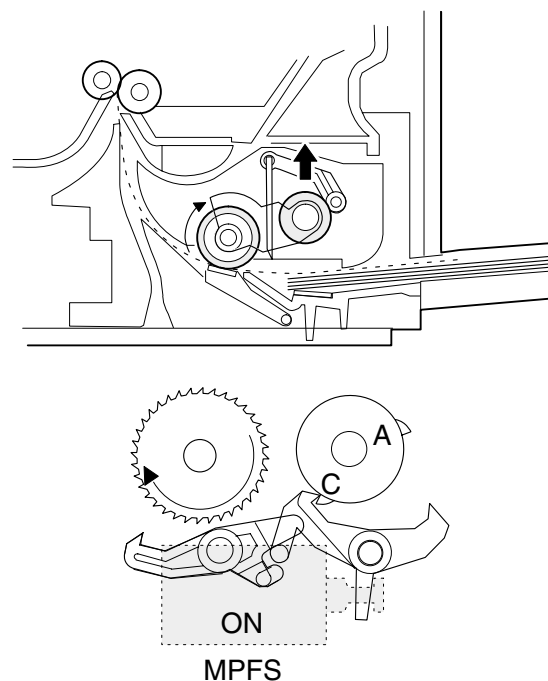
- 1) Before paper feed operation, the manual paper feed solenoid (MPFS) is turned OFF as shown in the figure below.



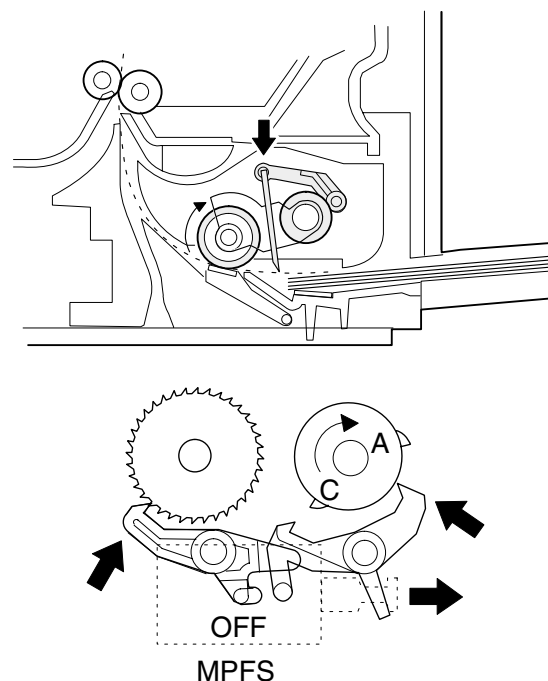
- 2) When the PRINT button is pressed, the manual paper feed solenoid (MPFS) turns on to disengage the manual paper feed latch A from the manual paper feed clutch sleeve A, rotating the manual paper feed roller and the manual take-up roller. At the same time, the manual paper feed stopper opens and the manual take-up roller is pressed to the surface of the paper to start paper feeding.



- 3) When pawl C of the manual paper feed clutch sleeve is hung on the manual feed latch, the manual feed stopper falls and the manual take-up roller rises. At that time, the manual paper feed roller is rotating.



- 4) The lead edge of the transported paper is pressed on the resist roller by the transport roller. Then the paper is stopped temporarily to make synchronization with the lead edge of the image on the OPC drum. The operations hereinafter are the same as the paper feed operations from the tray. (Refer to A-5 ~ 8.)
- 5) The solenoid turns off to close the gate and return to the initial state.



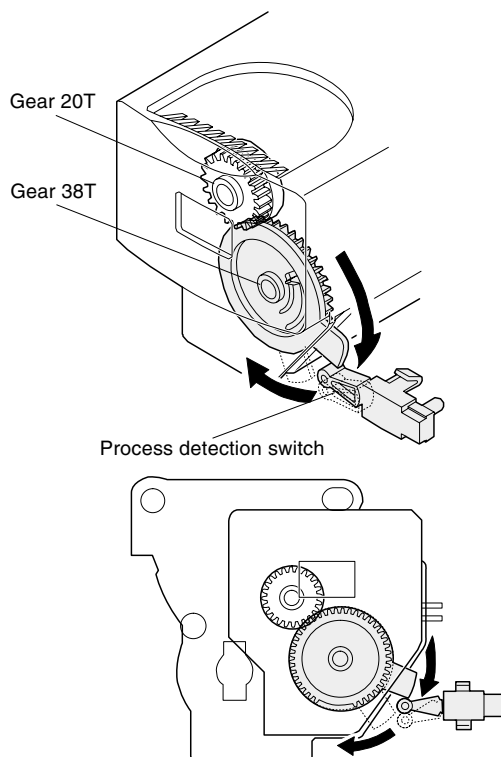
(3) Conditions of occurrence of paper misfeed

- a. When the power is turned on:
PPD or POD is ON when the power is turned on.
- b. Copy operation
 - a. PPD1 jam
 - 1) PPD1 does not turn off within 4 sec after turning on the resist roller.
 - b. PPD2 jam
 - 1) PPD2 is off immediately after turning on the resist roller.
 - 2) PPD2 does not turn off within 1.2 sec after turning off the resist roller.

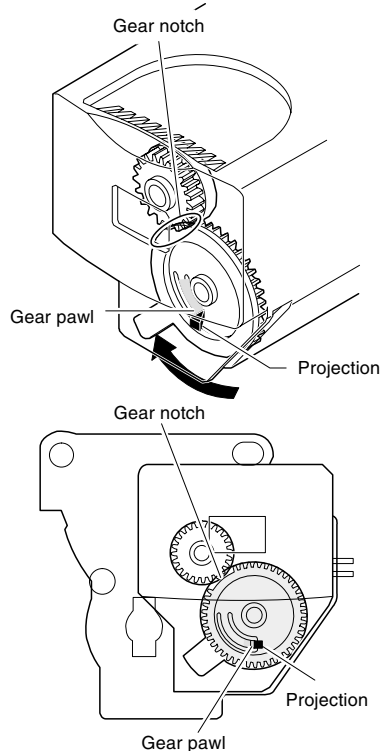
- c. POD jam
- 1) POD does not turn on within 2.9 sec after turning on the resist roller.
 - 2) POD does not turn off within 1.5 sec ~ 2.7 sec after turning off PPD2.

6. Process unit new drum detection mechanism

- 1) When the power is turned on, the detection gear 38T is rotated in the arrow direction by the detection gear 20T to push the microswitch (process detection switch) installed to the machine sensor cover, making a judgement as a new drum.



- 2) When the detection gear 38T turns one rotation, there is no gear any more and it stops. The latch section of the 38T gear is latched and fixed with the projection of the process cover.



7. D-D (Duplex to Duplex) mode paper/document transport (DM-1505 only)

A. Initial state

Set duplex documents on the document tray.

Set paper on the cassette. (In the duplex mode, the manual feed tray cannot be selected.)

B. Front copy

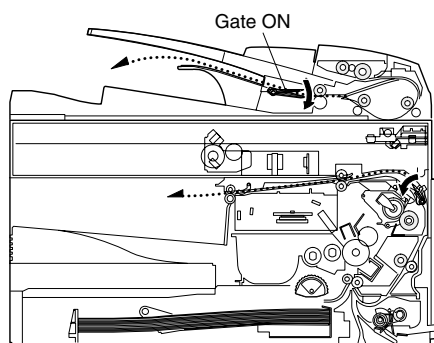
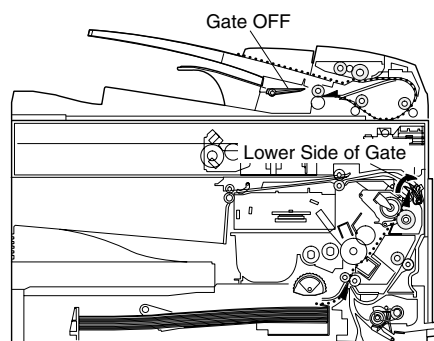
Document transport: The document feed roller feeds the document from the paper feed roller to the PS roller.

- The document is exposed in the exposure section, and sent to the document exit section by the transport/paper exit roller.
- R-SPF gate solenoid ON
- The document is sent to the intermediate tray (but not discharged completely.)
- The document is stopped once, then switchback operation is performed. (To the back copy)

Paper transport:

The document is passed through the paper feed roller and the PS roller by the paper feed roller and the images on the front surface are transferred.

- The paper is passed through the fusing section and the lower side of the gate section to the paper exit tray side, (but not discharged completely.)
- It is stopped once and switchback operation is performed. (To the back copy)



C. Back copy

Document transport: By switchback operation, the document is sent through the PS roller to the exposure section, where the back of the document is exposed.

- It is sent to the document exit section by the transport roller and the paper exit roller.
- R-SPF gate solenoid ON. The document is sent to the intermediate tray, (but not discharged completely.)
- It is stopped once and switchback operation is performed.
- It is sent through the PS roller and the exposure section (without exposure operation) to the document exit section.
- R-SPF gate solenoid OFF
- The document is discharged to the document exit tray.

Paper transport: Switchback operation is performed.

- The paper is sent through the upper side of the gate section and the duplex transport section, and the PS roller, and the images on the back are transferred.
- It is sent through the fusing section and discharged to the paper exit tray.

Switchback operation is made after back copying in order to discharge documents according to the setting.

Set document Documents after discharge,

$\frac{1}{2}$	with empty feed	$\frac{4}{3}$	without empty feed	$\frac{3}{4}$
$\frac{3}{4}$		$\frac{2}{1}$		$\frac{1}{2}$

There are following job modes as well as D-D mode.

S - S (Simplex to Simplex)

S - D (Simplex to Duplex), Rotation copy mode (The back images are rotated 180°.)

S - D (Simplex to Duplex), Copy mode without rotation

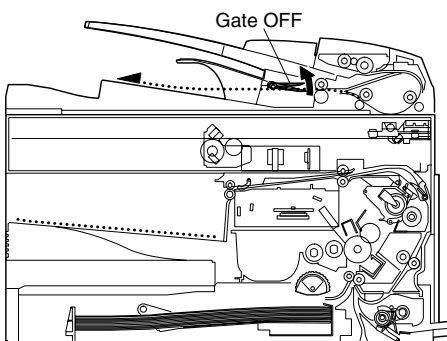
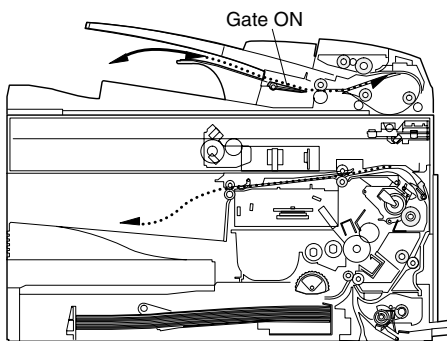
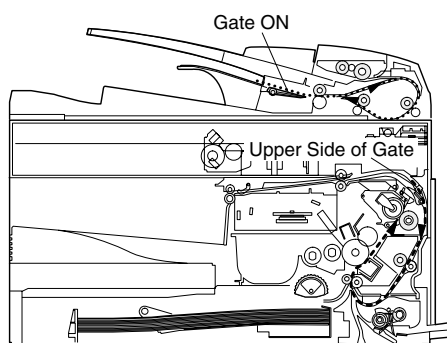
D - S (Duplex to Simplex)

Rotation copy mode:

The front and the back are in upside down each other.

Copy mode without rotation:

The front and the back are not in upside down.



[7] DISASSEMBLY AND ASSEMBLY

Before disassembly, be sure to disconnect the power cord for safety. The disassembly and assembly procedures are described for the following sections:

1. High voltage section
2. Operation panel section
3. Optical section
4. Fusing section
5. Tray paper feed/transport section
6. Manual paper feed section
7. Rear frame section
8. Power section
9. SPF section
10. 2nd cassette section
11. DUP motor section
12. Reverse roller section
13. RSPF section

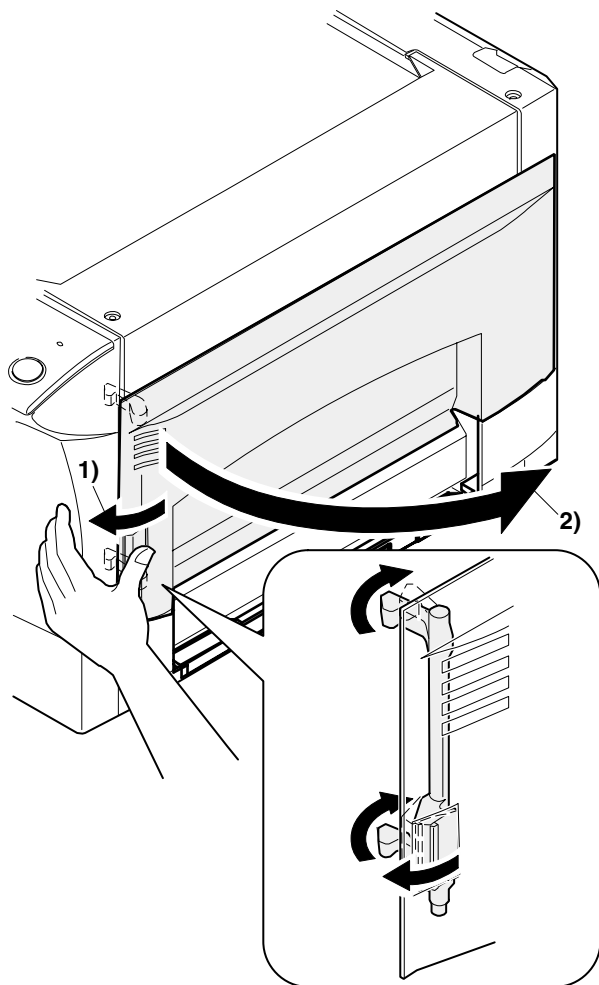
1. High voltage section

A. List

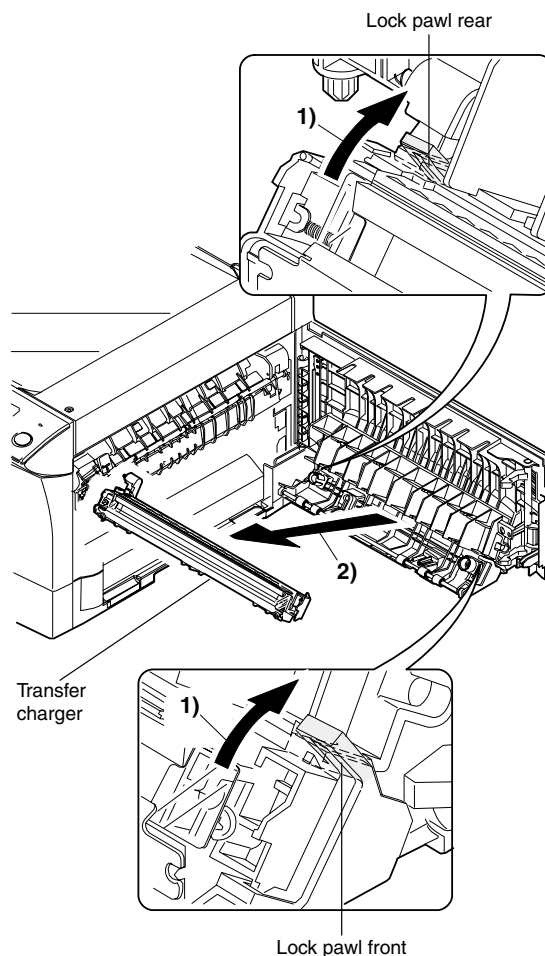
No.	Part name	Ref.
1	Transfer charger unit	
2	Charger wire	

B. Disassembly procedure

- (1) Press the side cover open/close button and open the side cover.



- (2) Push up the lock pawls (2 positions) of the side cover, and remove the transfer charger.

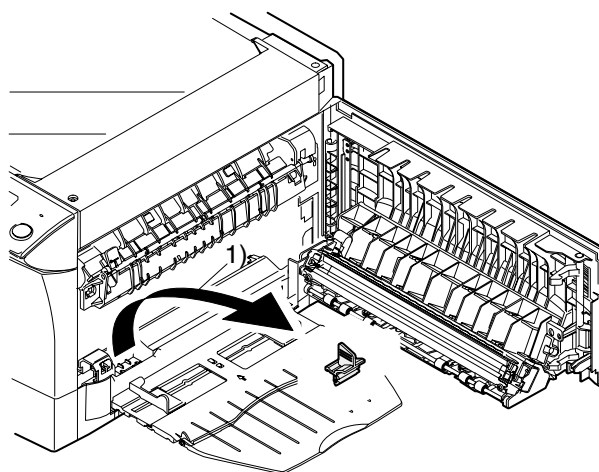


C. Assembly procedure

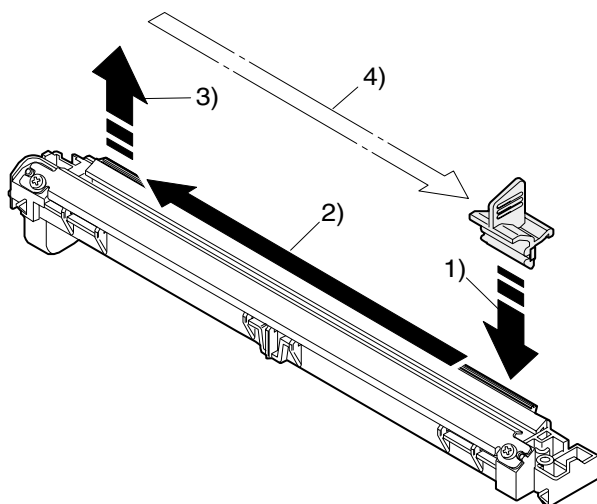
For assembly, reverse the disassembly procedure.

D. Charger wire cleaning

- (1) Remove the charger cleaner from the manual paper feed unit.



- (2) Set the charger cleaner to the transfer unit, and move it reciprocally a few times in the arrow direction shown in the figure below.

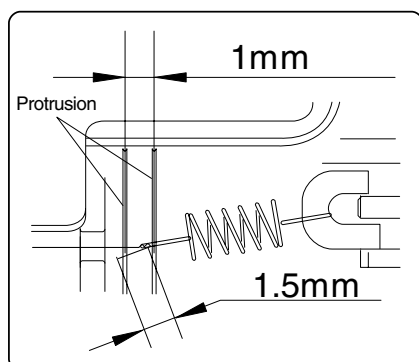
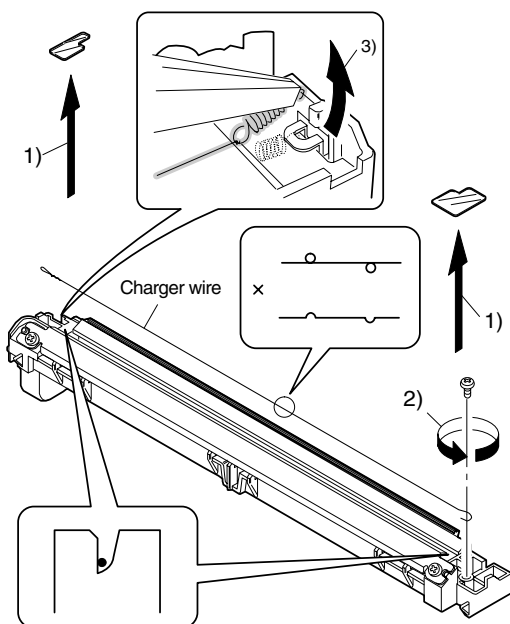


E. Charger wire replacement

- (1) Remove the TC cover and remove the screw.
- (2) Remove the spring and remove the charger wire.
- (3) Install a new charger wire by reversing the procedures (1) and (2).

At that time, be careful of the following items.

- The rest of the charger wire must be within 1.5mm.
- The spring hook section (charger wire winding section) must be in the range of the projection section.
- Be careful not to twist the charger wire.



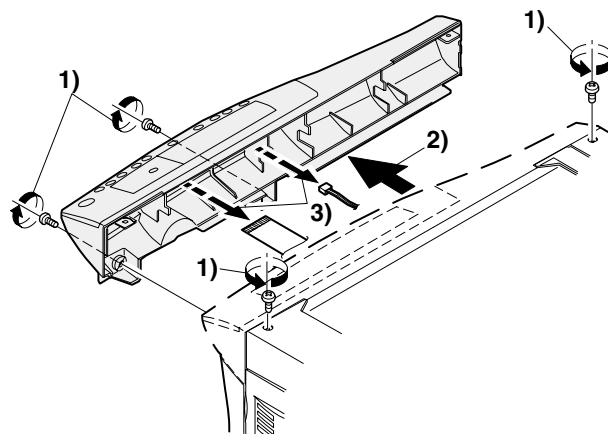
2. Operation panel section

A. List

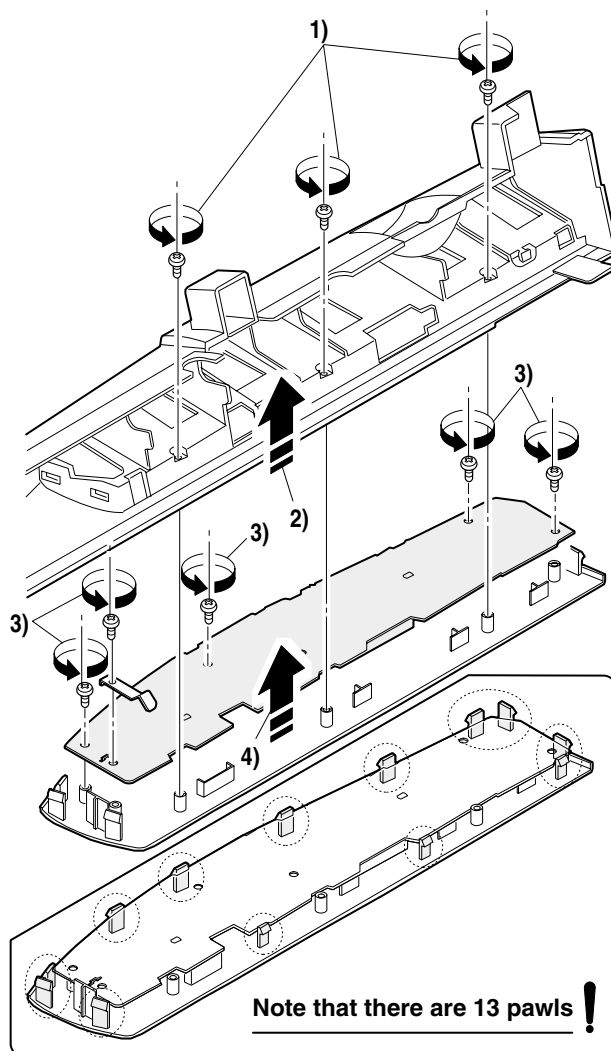
No.	Part name	Ref.
1	Operation panel unit	
2	Operation PWB	

B. Disassembly procedure

- (1) Remove the screws (4 pcs.), the harness, and the operation panel unit.



- (2) Remove the screws (3 pcs.) and the PWB holder.
- (3) Remove the screws (3 pcs.) and the operation PWB.



C. Assembly procedure

For assembly, reverse the disassembly procedure

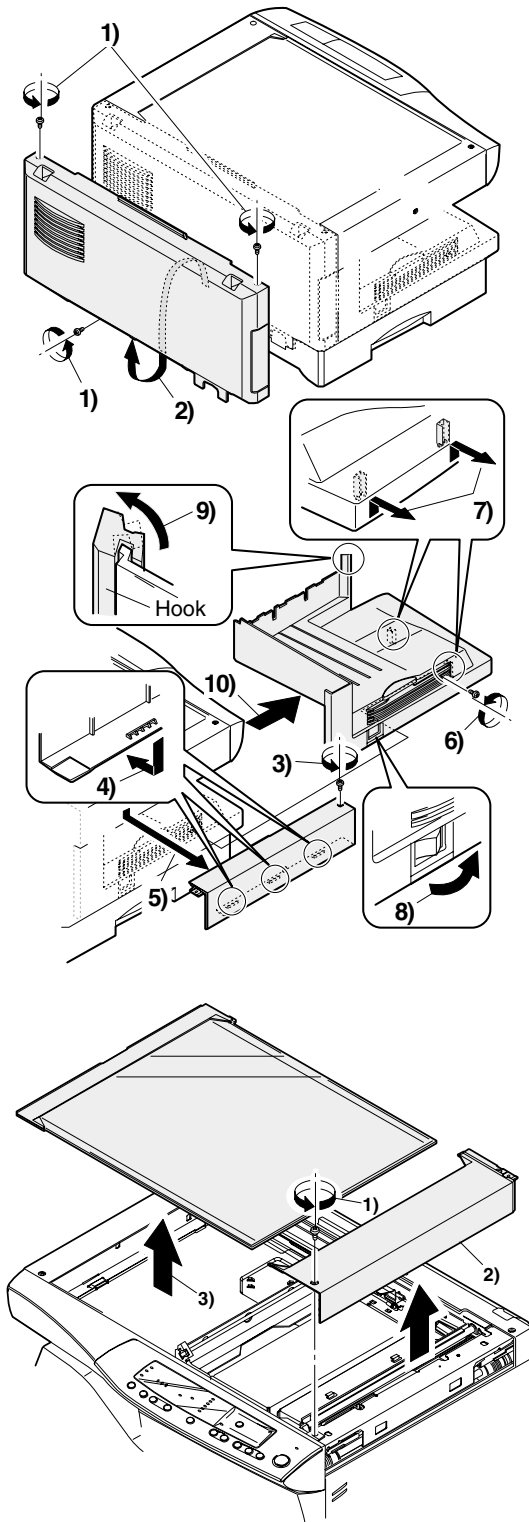
3. Optical section

A. List

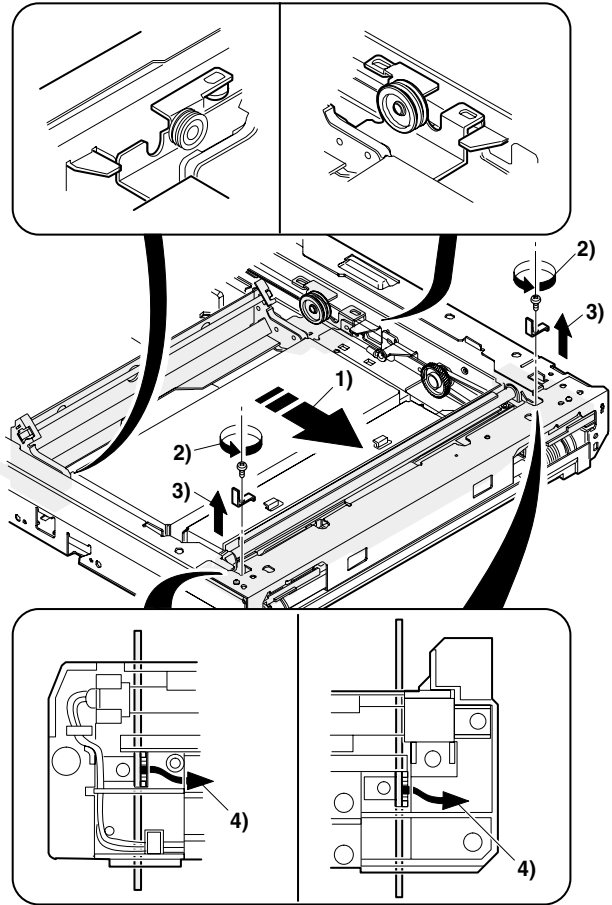
NO.	Part name	Ref.
1	Copy lamp unit	
2	Copy lamp	
3	Lens unit	

B. Disassembly procedure

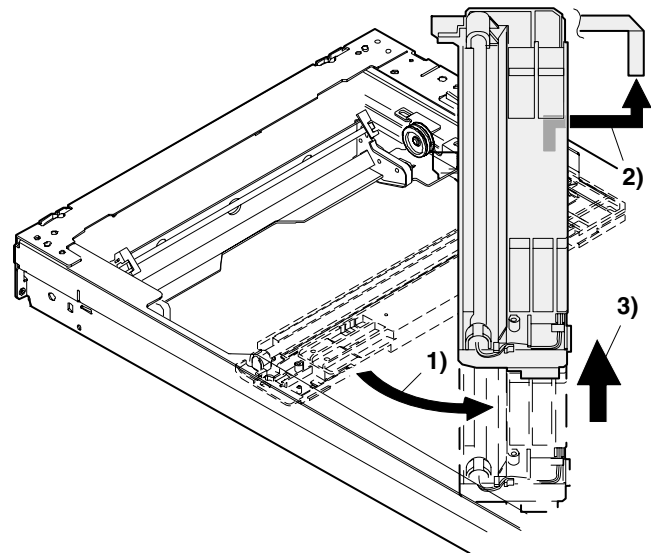
(1) Remove the parts as shown below.



(2) Remove the screws (2pcs.), and remove the copy lamp unit from the mirror base drive wire.

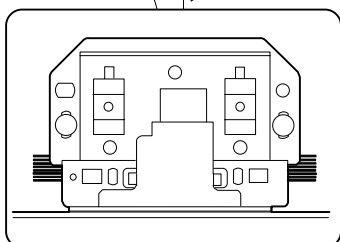
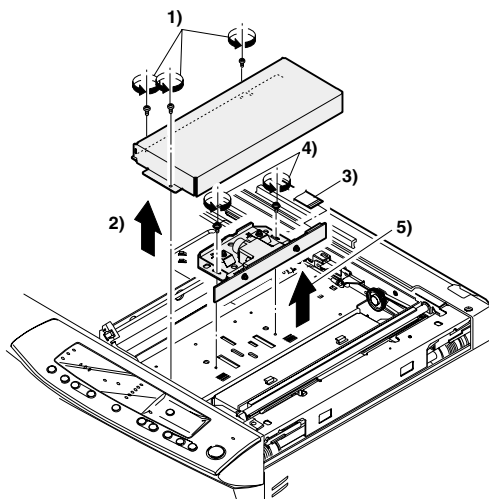


(3) Pull the copy lamp unit toward you to remove the harness.



(4) Remove the screw (4 pc) and remove the cover.

(5) Remove the screws (2 pcs.), the harness, and the optical unit.



When installing the lens unit, refer to “8-6. Lens unit installation reference.”

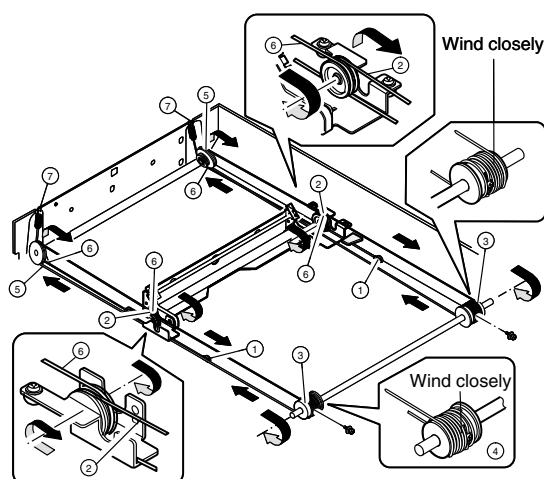
C. Assembly procedure

Basically reverse the disassembly procedure.

The mirror base drive wire and the lens drive wire stretching methods are described below.

a. Mirror base drive wire stretching

1. Hook the metal fixture of the mirror base drive wire on the projection of the optical base plate.
2. Pass the wire through the external groove of the double pulley. (At that time, check that No. 2/3 mirror unit is in contact with the mirror base positioning plate.)
3. Hold so that the winding pulley groove is up, and wind the mirror base drive wire 9 turns.
4. Put the 8th turn of the mirror base drive wire in the winding pulley groove and fix with a screw.
5. Pass the wire under Mo. 2/3 mirror unit plate and wind it around pulley A.
6. Pass the wire through the internal groove of the double pulley, and pass through pulley B.
7. Hook the spring hook on the optical base plate.



After installing the mirror base drive wire, be sure to perform main scanning direction image distortion adjustment.

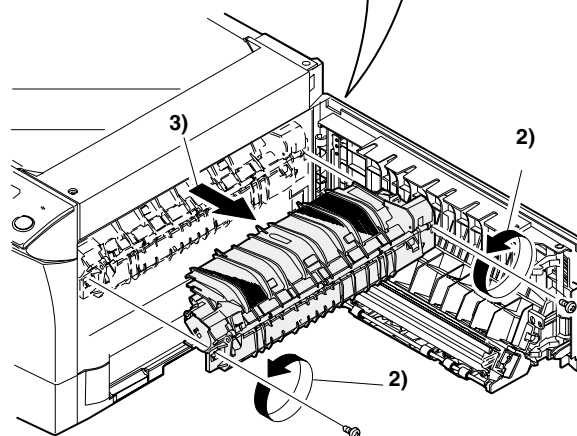
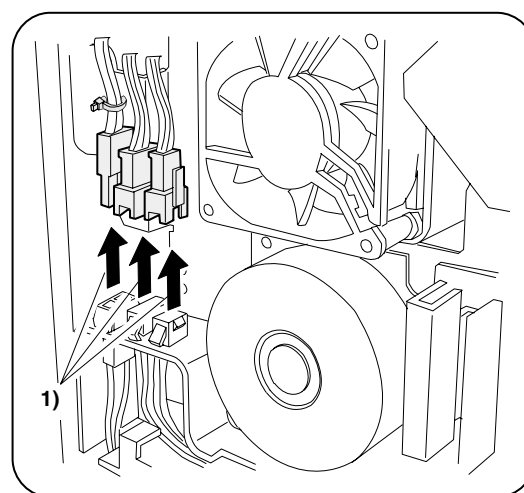
4. Fusing section

A. List

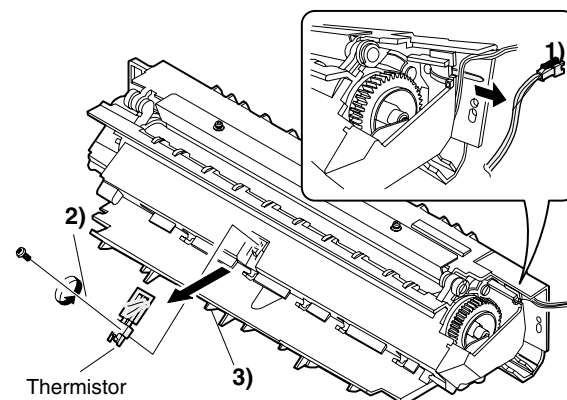
No.	Part name	Ref.
1	Thermistor	
2	PPD2 sensor	
3	Heater lamp	
4	Pressure roller	
5	Heat roller	

B. Disassembly procedure

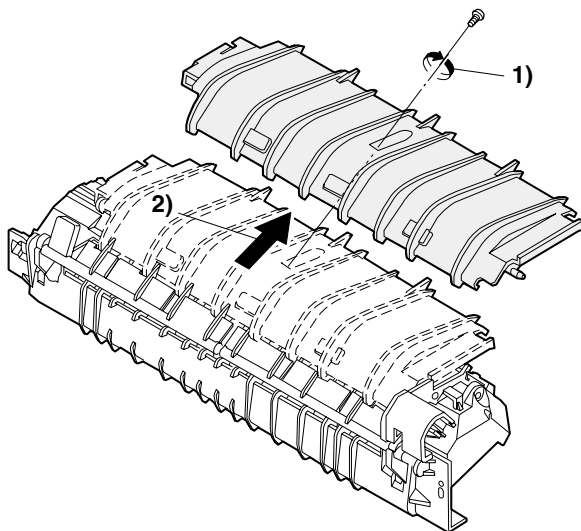
- (1) Remove the connectors (3 pcs.) of the rear cabinet.
- (2) Open the side cover, remove two screws, and remove the fusing unit.



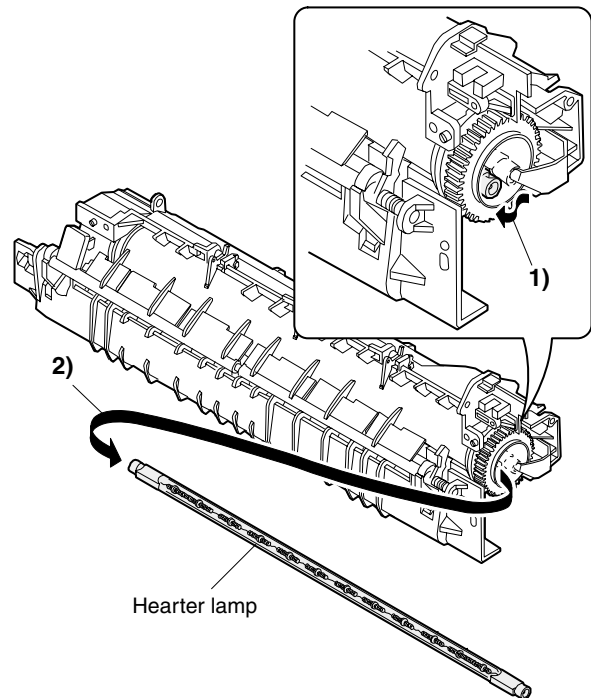
- (3) Cut the binding band, remove the screw, and remove the thermistor.



(4) Remove the screw and remove the U-turn guide.

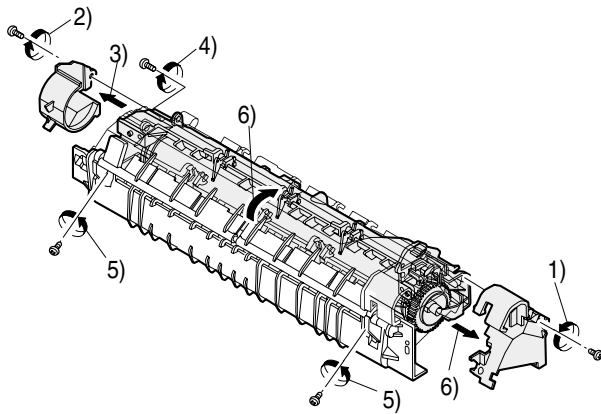


(7) Remove the plate spring on the right and remove the heater lamp.

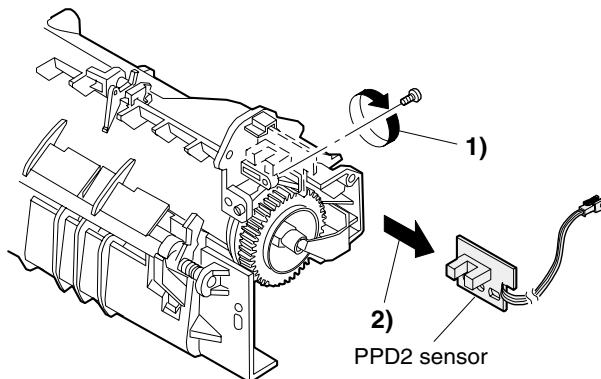


Pressure roller section disassembly

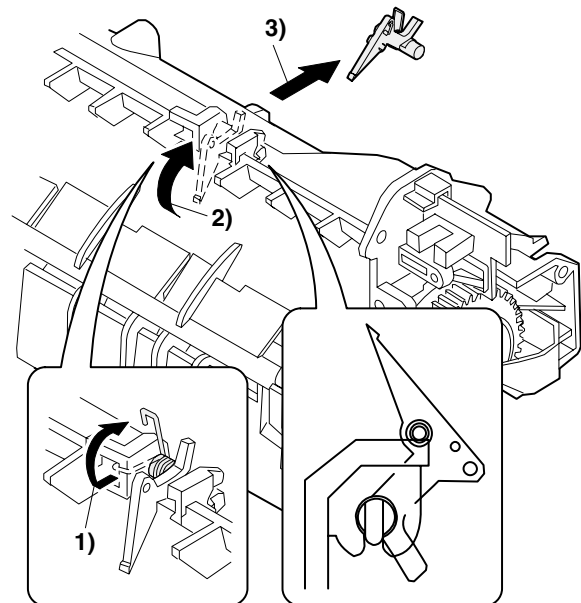
(5) Remove the three screws, remove the fusing cover lower on the right side, and open the heat roller section.



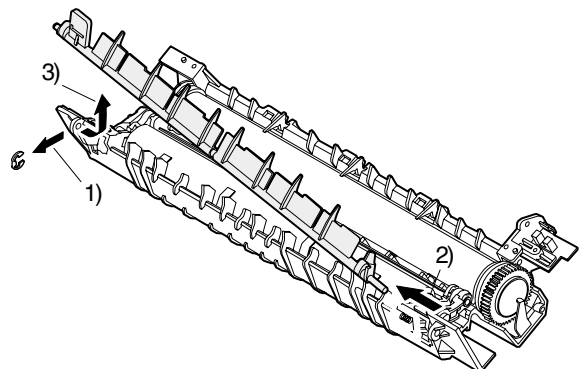
(6) Remove the screw and remove the PPD2 sensor.



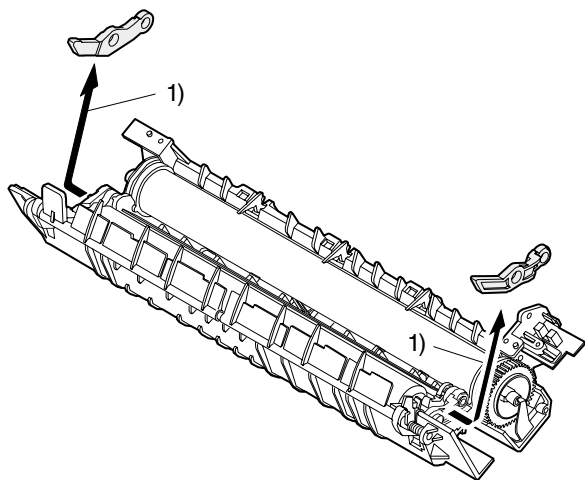
(8) Remove the spring and remove the separation pawls (3 pcs.).



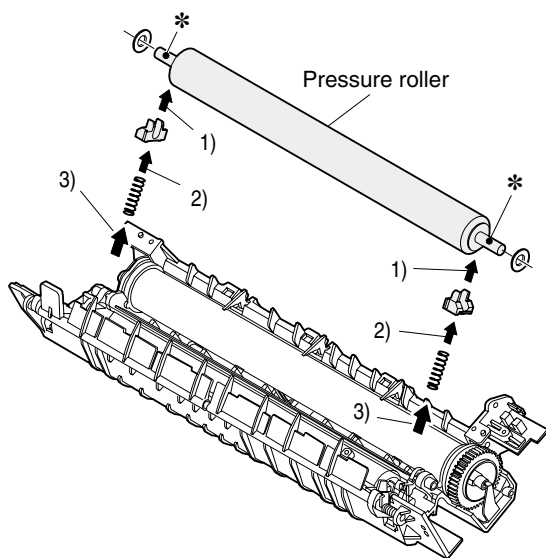
(9) Remove the E-ring and remove the reverse gate.



- (10) Remove the pressure release levers on the right and the left sides.



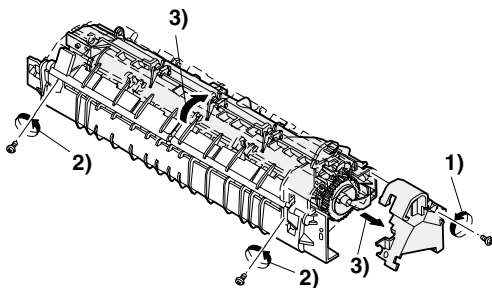
- (11) Remove the pressure roller, the pressure bearing, and the spring.
Note: Apply grease to the sections specified with *.



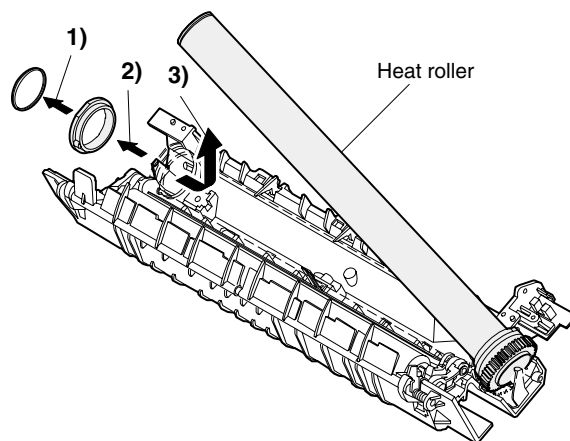
Heat roller disassembly

(Continued from procedure (4).)

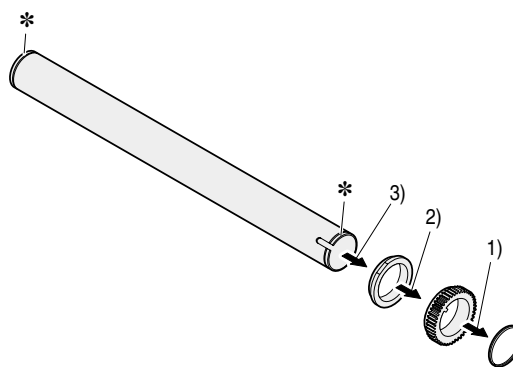
- (5) Remove screws, remove the fusing cover, and open the heat roller section.



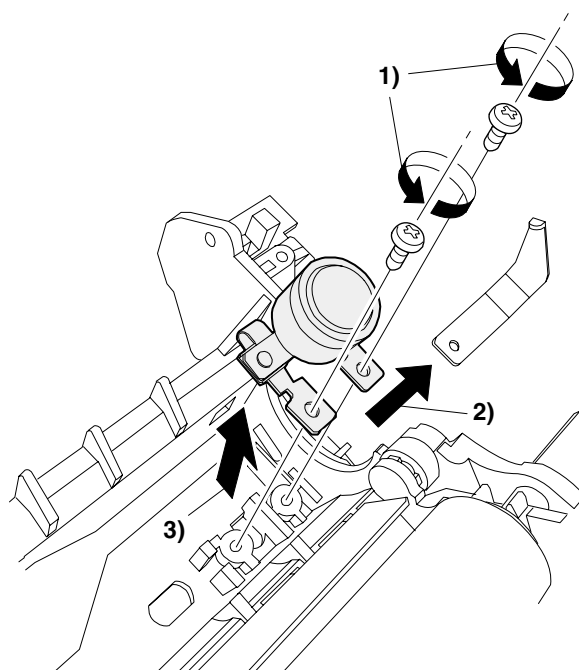
- (6) Remove the C-ring and the fusing bearing, and remove the heat roller.



- (7) Remove the parts from the heat roller.
Note: Apply grease to the sections specified with *.



- (8) Remove two screws and remove the thermo unit.



C. Assembly procedure

For assembly, reverse the disassembly procedure.

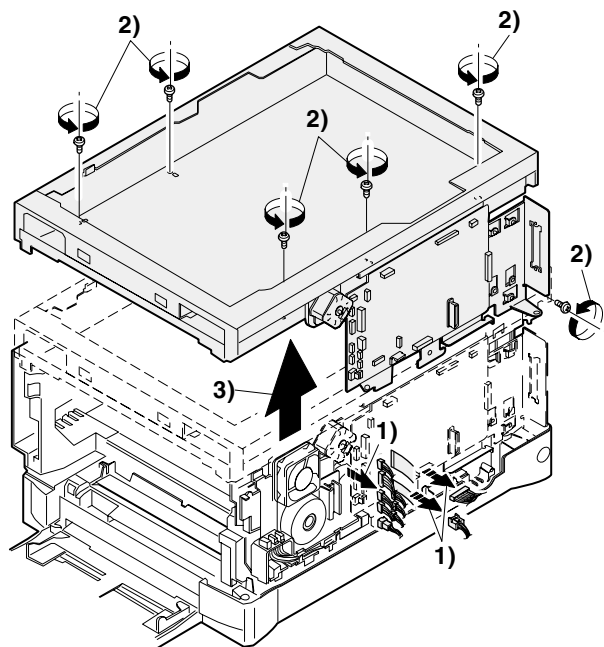
5. Tray paper feed/transport section

A. List

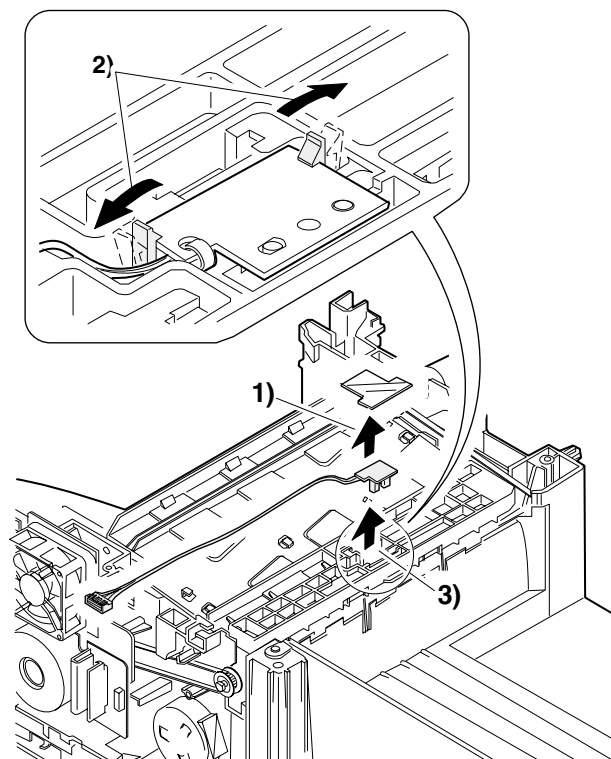
No.	Part name	Ref.
1	PPD1 sensor PWB	
2	LSU unit	
3	Intermediate frame unit	
4	Paper feed roller	

B. Disassembly procedure

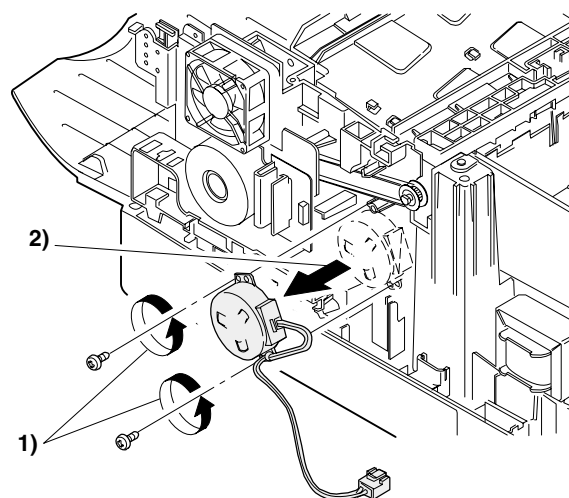
- (1) Remove six connectors and screws of the main PWB, and lift the optical unit and the main PWB to remove.



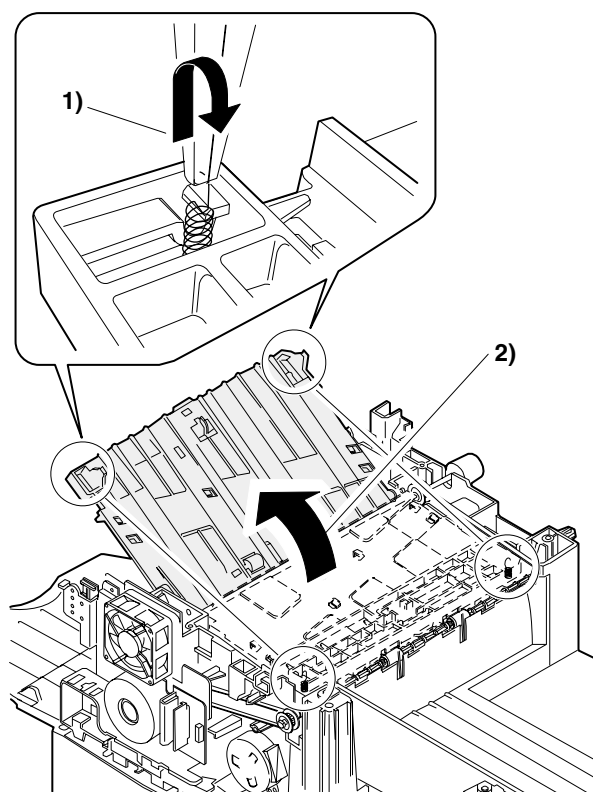
- (2) Remove the PWB insulation mylar and remove the paper transport detection sensor (PPD2).



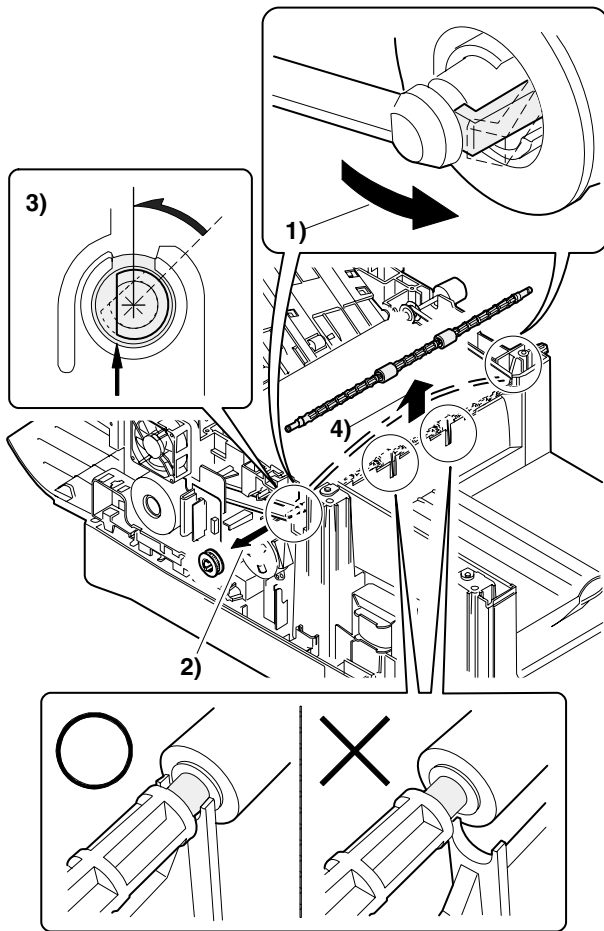
- (3) Remove two screws and remove the toner motor.



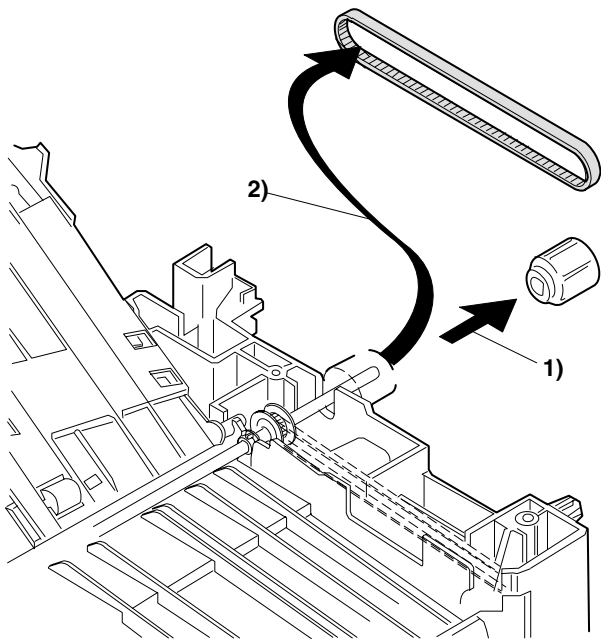
- (4) Remove two springs and open the intermediate frame unit.



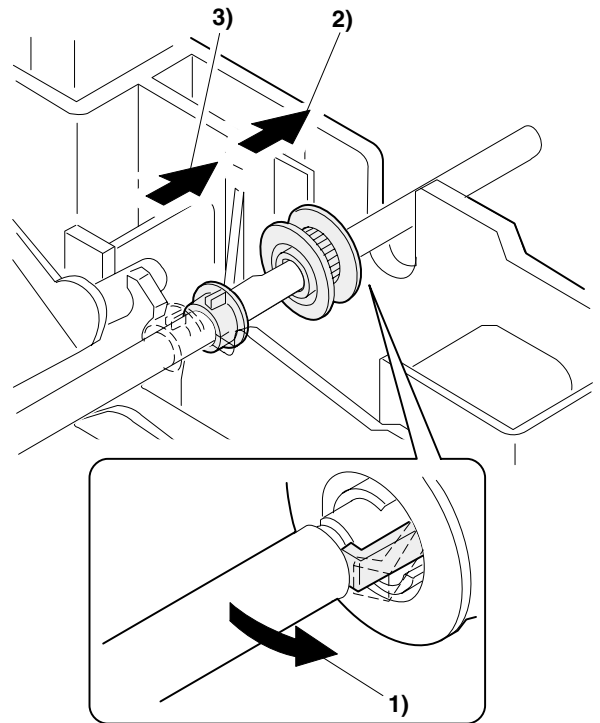
- (5) Remove the pulleys on the both sides and remove the paper exit roller.



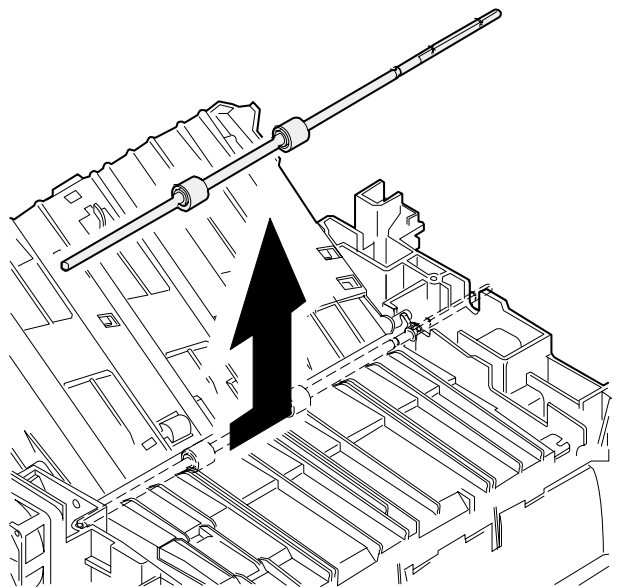
- (6) Pull out the paper exit roller knob and remove the belt.



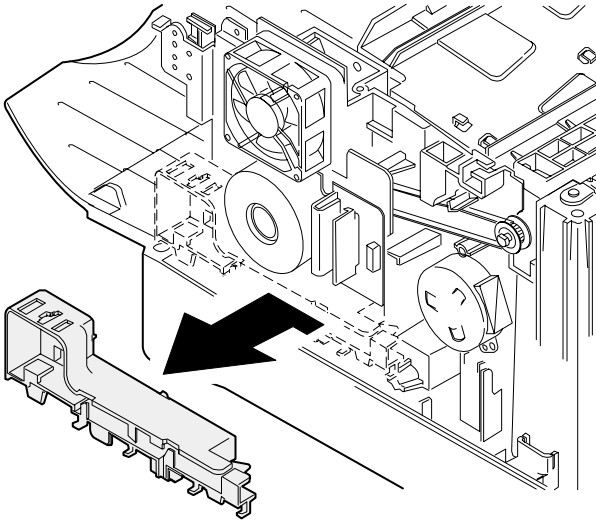
- (7) Release the belt pulley (a) lock and remove the belt pulley bearing.



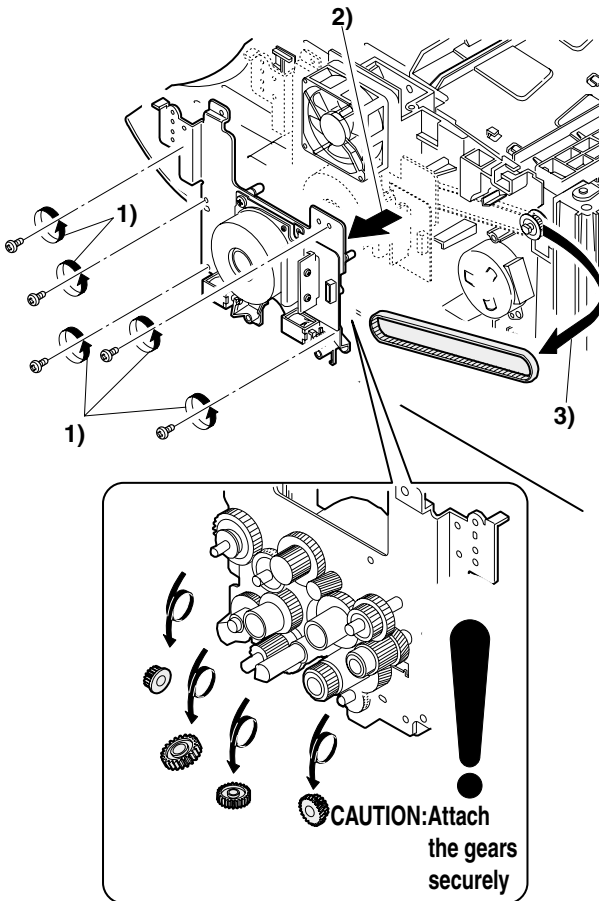
- (8) Remove the paper exit roller.



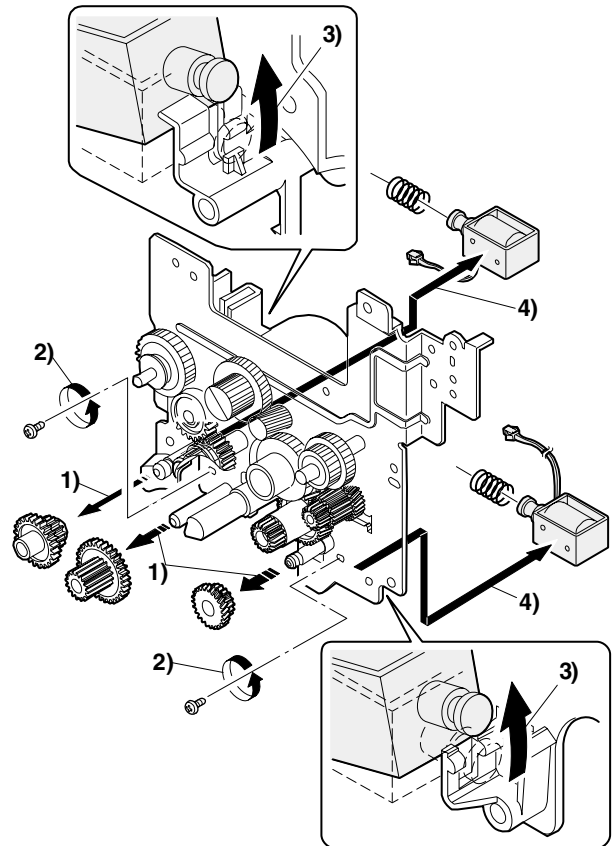
(9) Remove the harness guide.



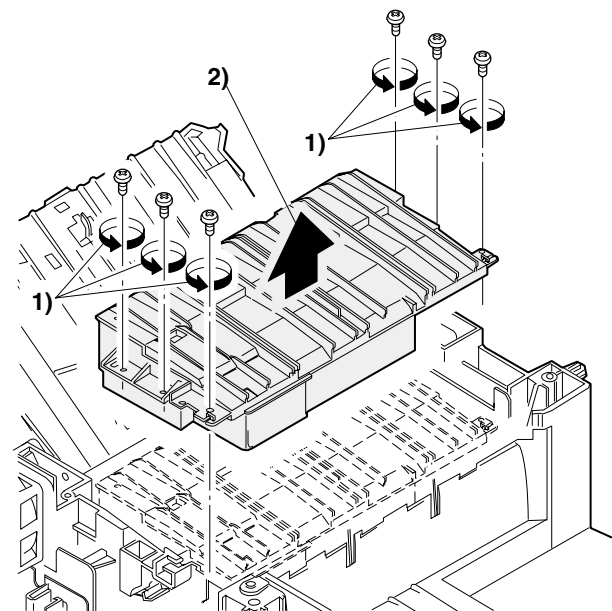
(10) Remove five screws and remove the main drive plate and the belt.



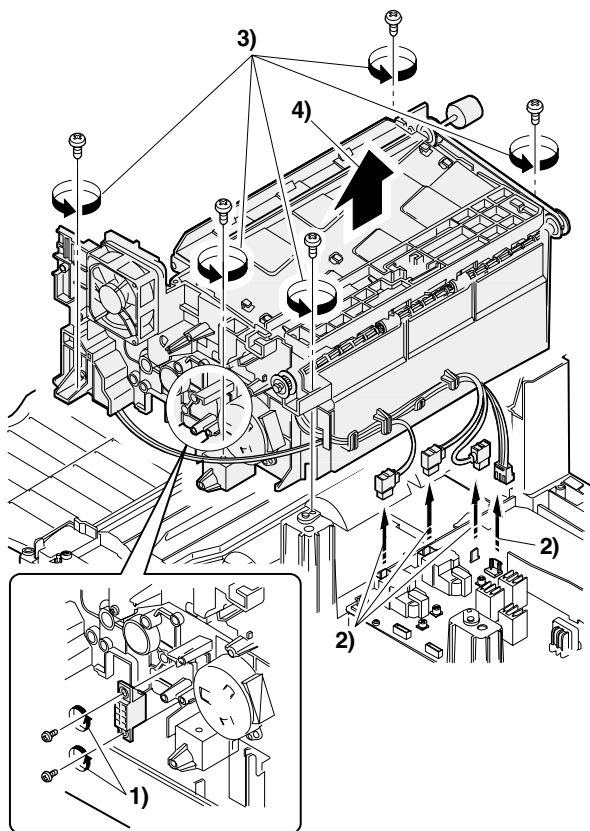
(11) Remove the parts as shown below, and remove the pressure release solenoid and the paper feed solenoid.



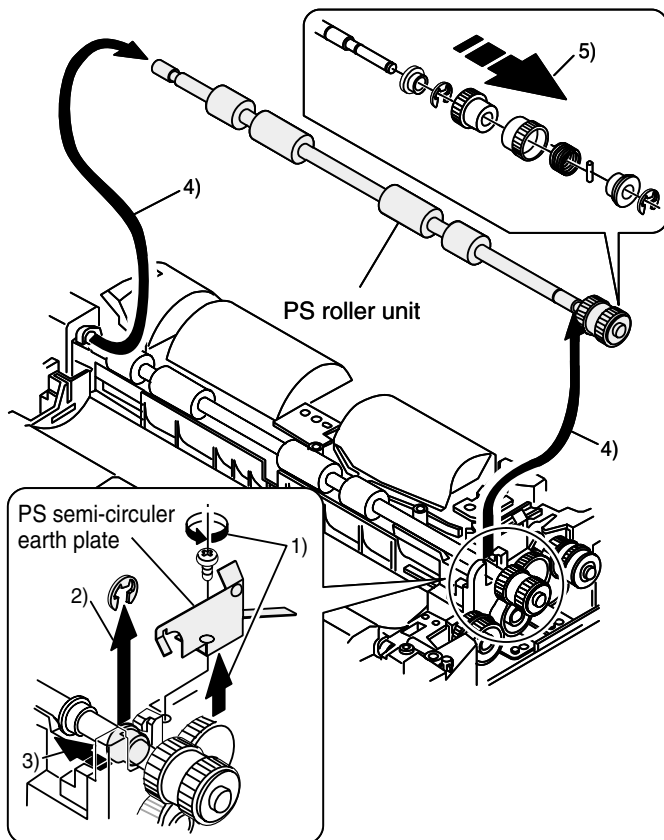
(12) Remove six screws and remove the LSU unit.



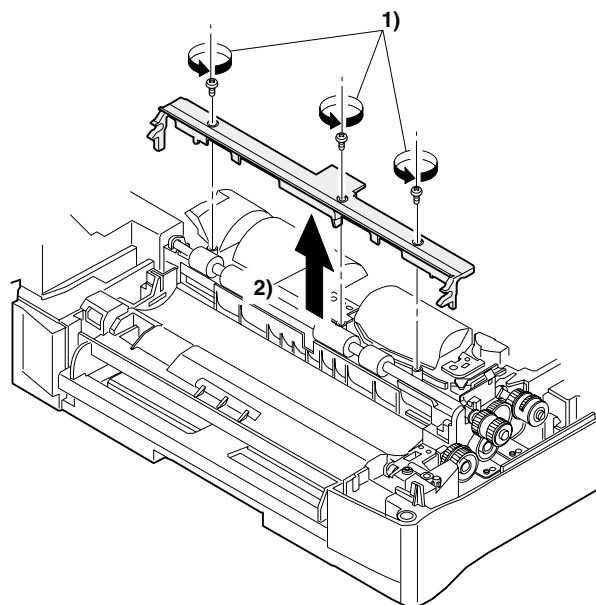
- (13) Remove two screws and remove the fusing connector.
 (14) Remove five screws and the connector, and lift the intermediate frame unit to remove.



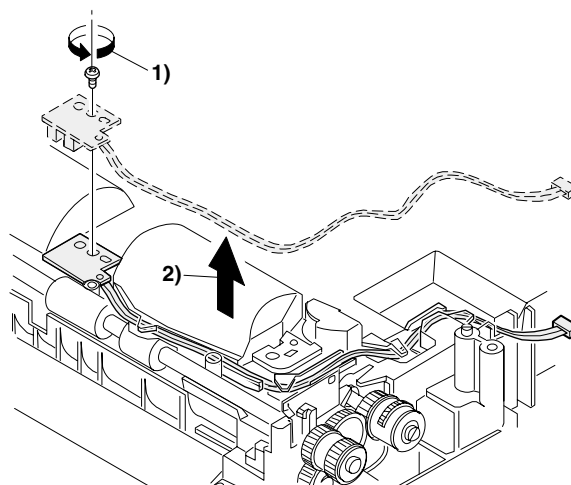
- (15) Remove the screw and the E-ring, and remove the PS semi-circular earth plate and the PS roller unit.
 (16) Remove the E-ring and remove the spring clutch from the PS roller unit.



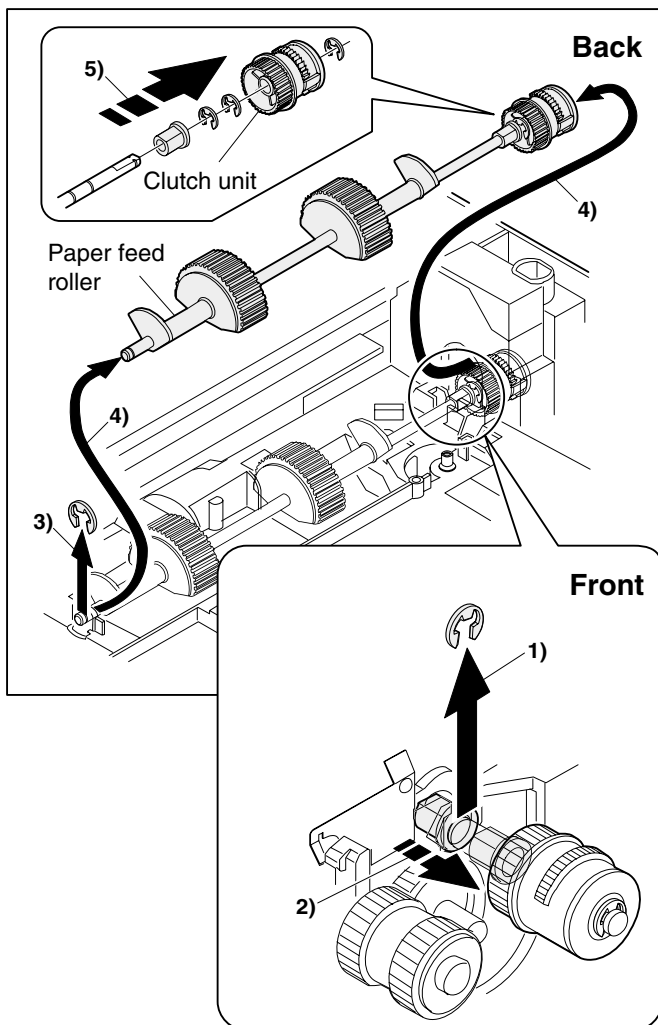
- (17) Remove three screws and remove the TC front paper guide.



- (18) Remove the screw and the connector, and remove the PPD1 sensor PWB.



- (19) Remove two E-rings and remove the paper feed roller.
 (20) Remove three E-rings and remove the clutch unit.



C. Assembly procedure

For assembly, reverse the disassembly procedure.

6. Manual paper feed section

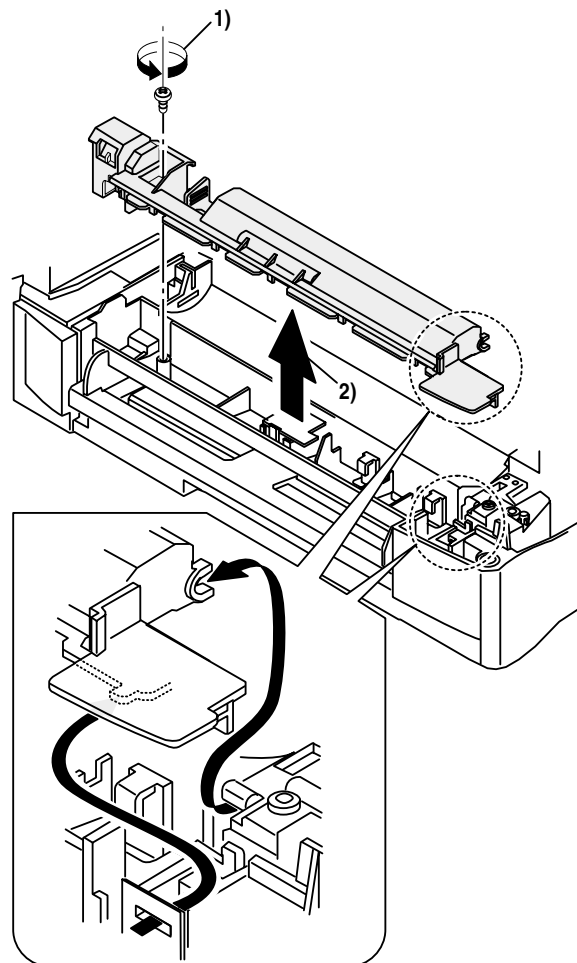
A. List

No.	Part name	Ref.
1	Manual transport roller	
2	Cassette detection switch	
3	PPD1 sensor PWB	
4	Side door detection unit	

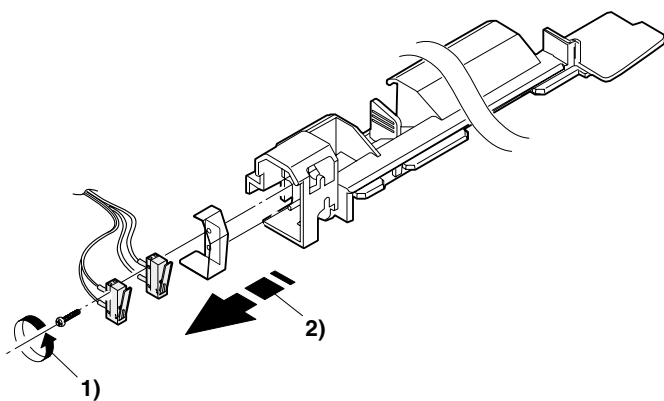
B. Disassembly procedure

Single unit

- (1) Remove the screw and remove the single upper cover.

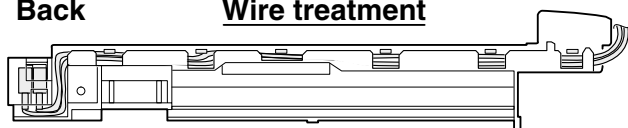


(2) Remove the screw and remove the side door detection unit.

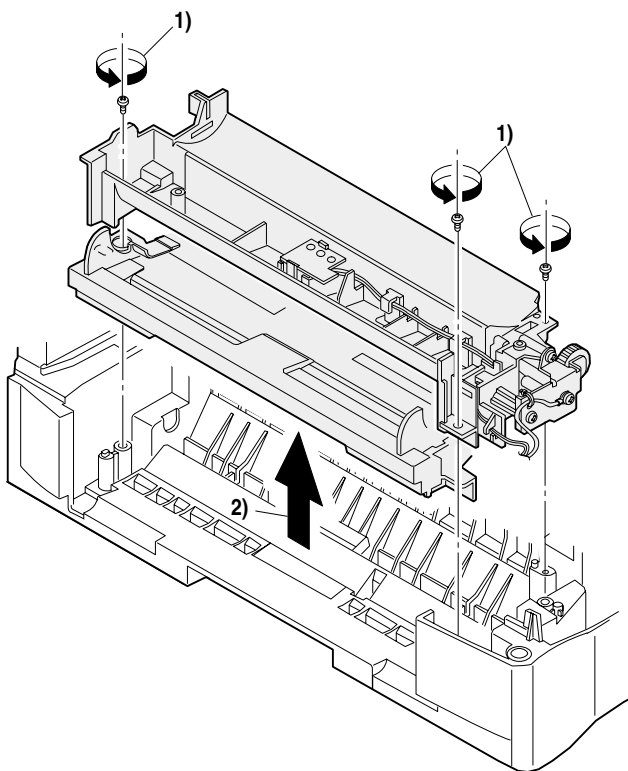


Back

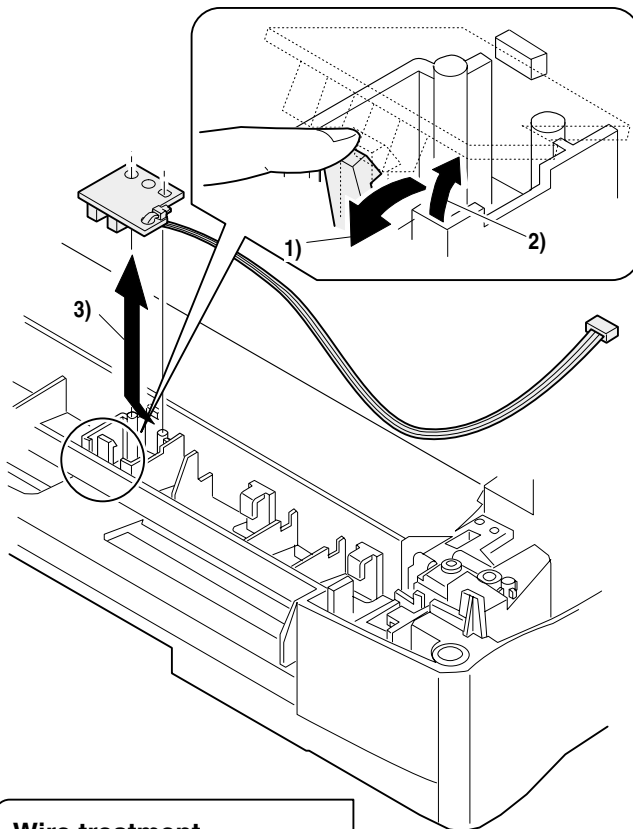
Wire treatment



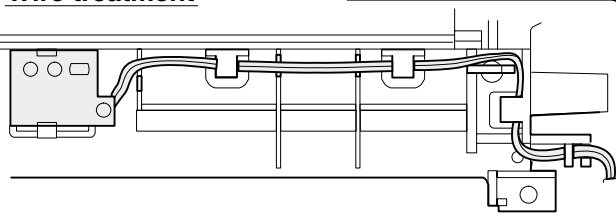
(3) Remove three screws and remove the single manual feed upper frame.



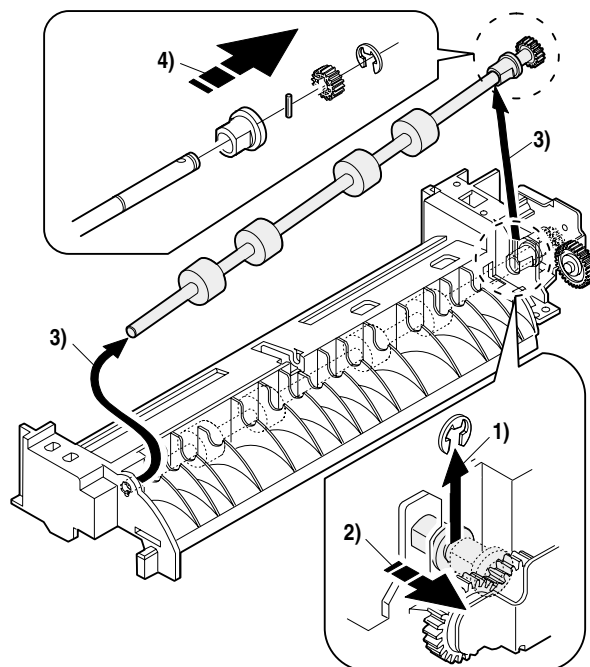
(4) Remove the PPD1 sensor PWB.



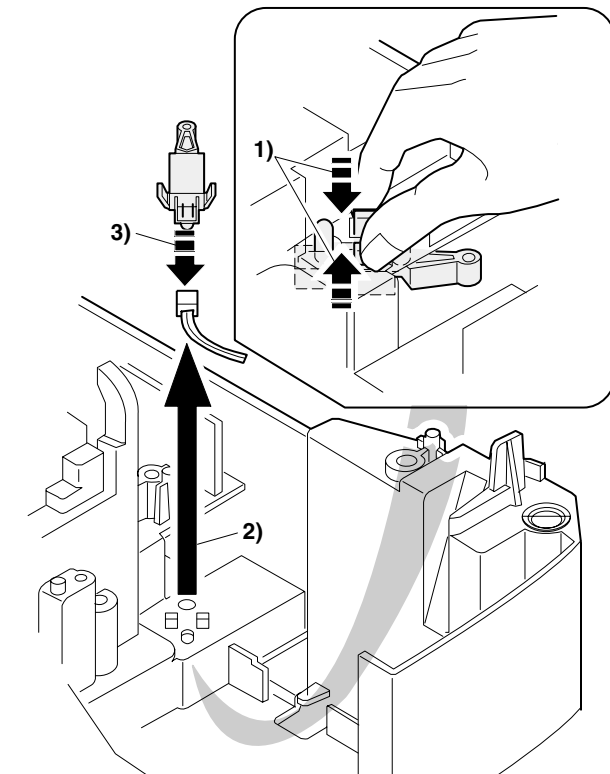
Wire treatment



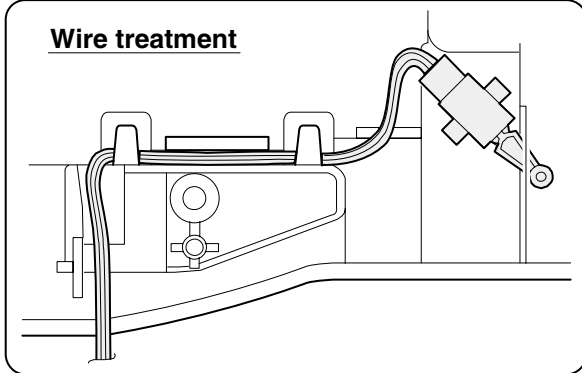
(5) Remove the E-ring and remove the manual paper feed transport roller.



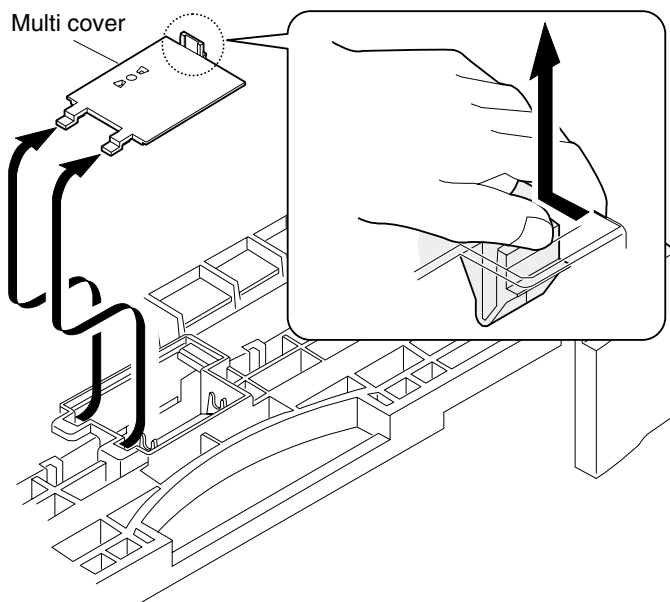
(6) Remove the cassette detection switch.



Wire treatment

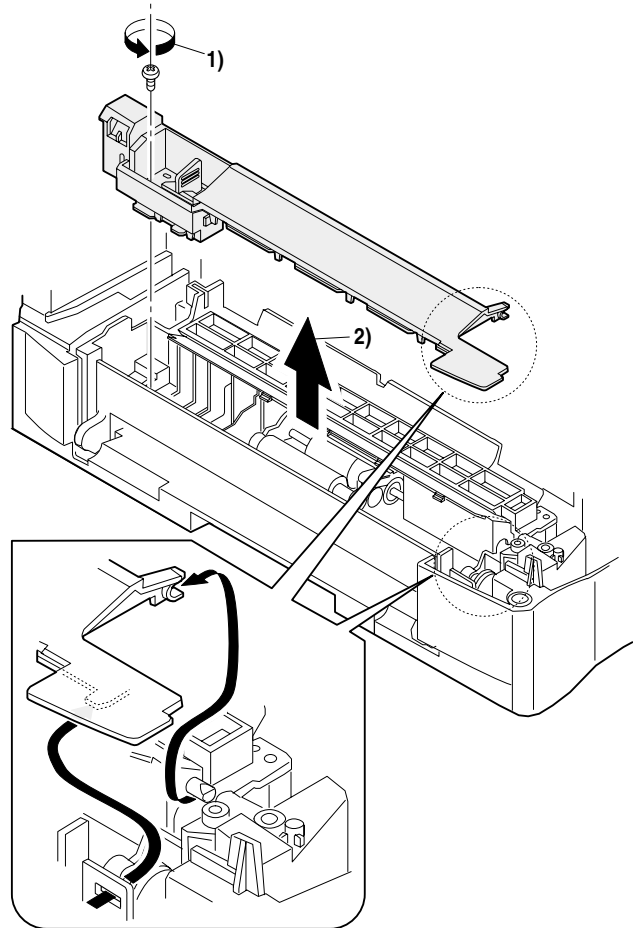


(7) Remove the multi cover.

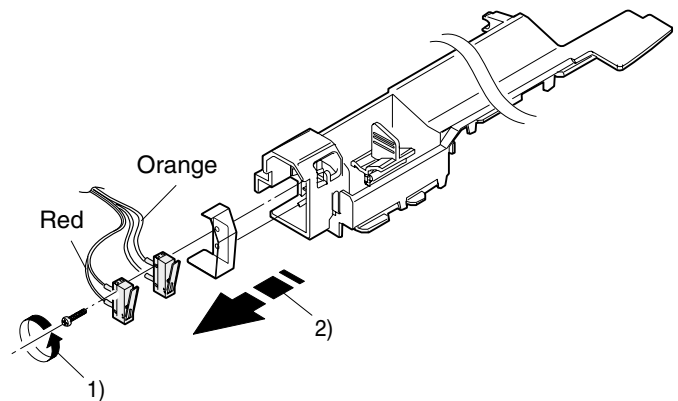


Multi unit

(1) Remove the screw and remove the multi upper cover.

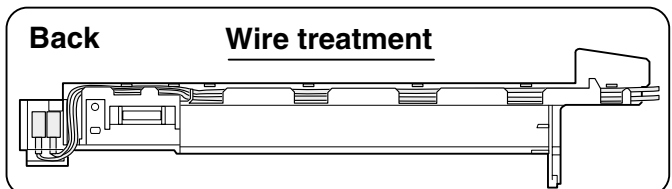


(2) Remove the screw and remove the side door detection unit.

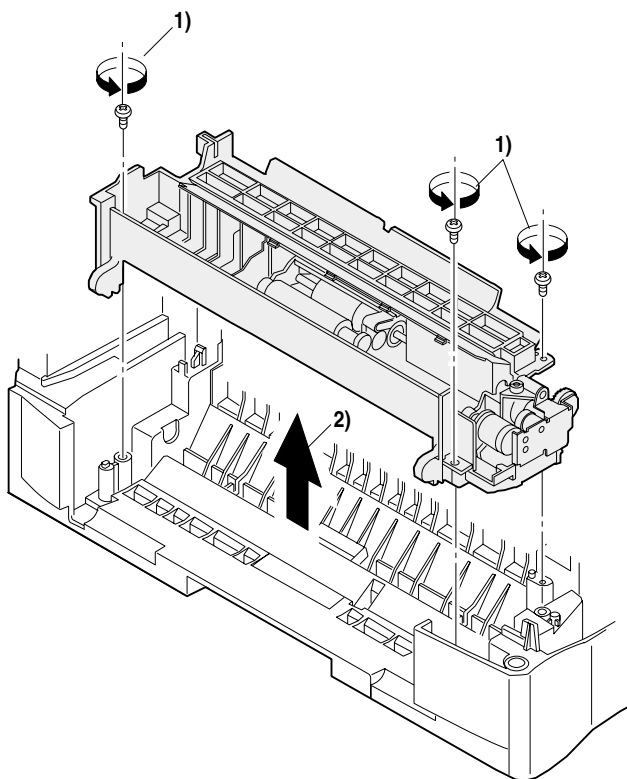


Back

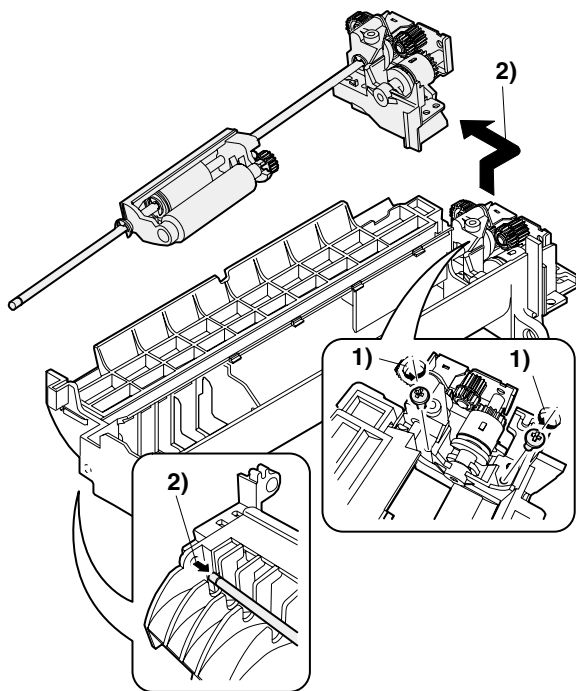
Wire treatment



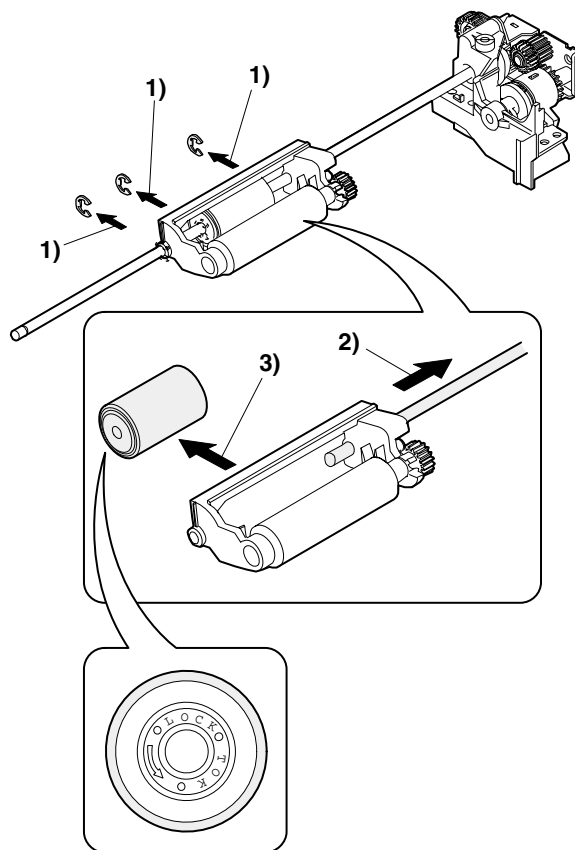
- (3) Remove three screws and remove the multi paper feed upper frame.



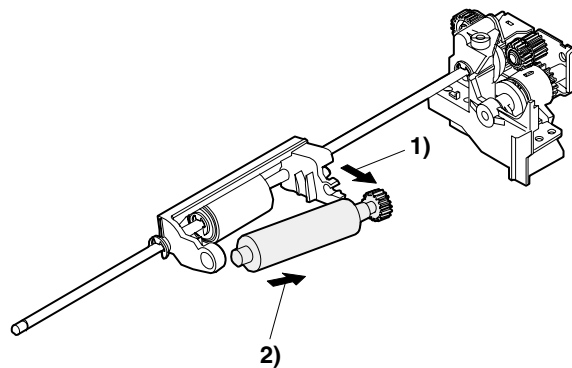
- (4) Remove two screws and remove the multi feed bracket unit from the multi paper feed upper frame.



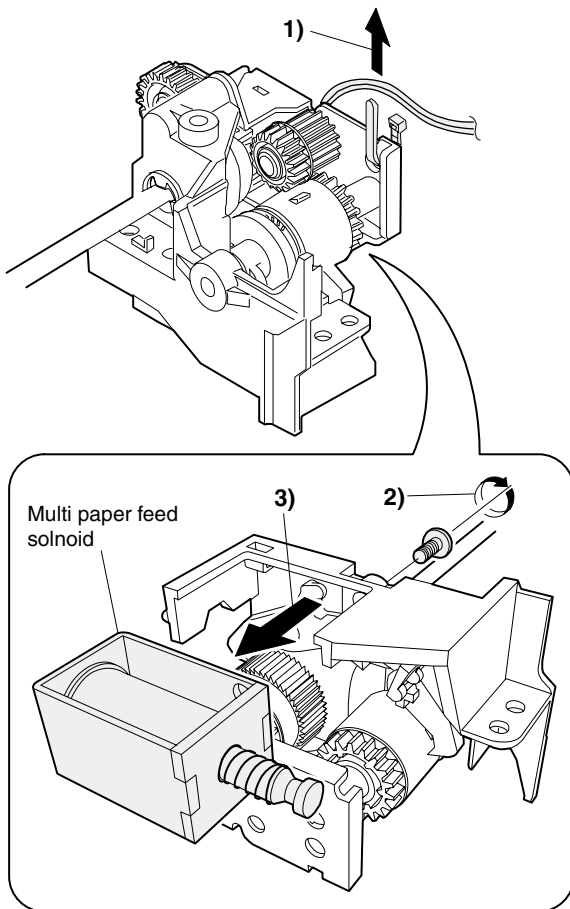
- (5) Remove three E-rings and remove the manual paper feed roller B9.



- (6) Remove the pick-up roller.



- (7) Cut the binding band and remove the multi paper feed solenoid.

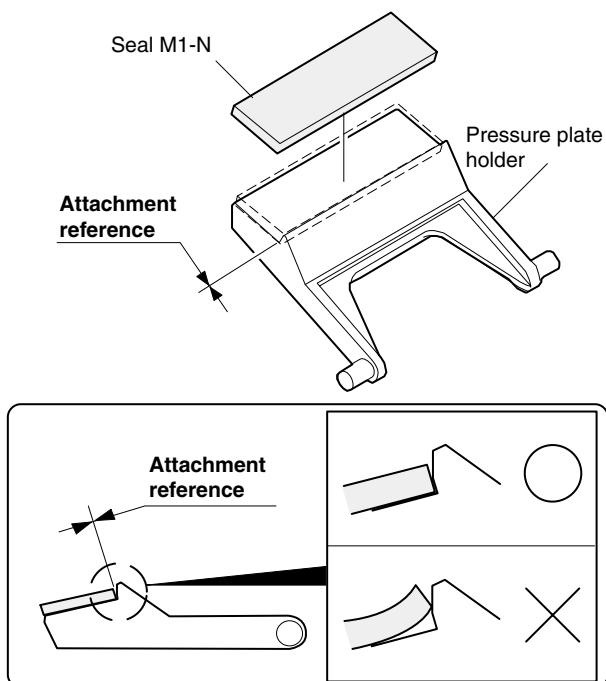


C. Assembly procedure

For assembly, reverse the disassembly procedure.

D. Pressure plate holder attachment

- (1) Attach the pressure plate holder so that the resin section is not covered with the seal M1-N.



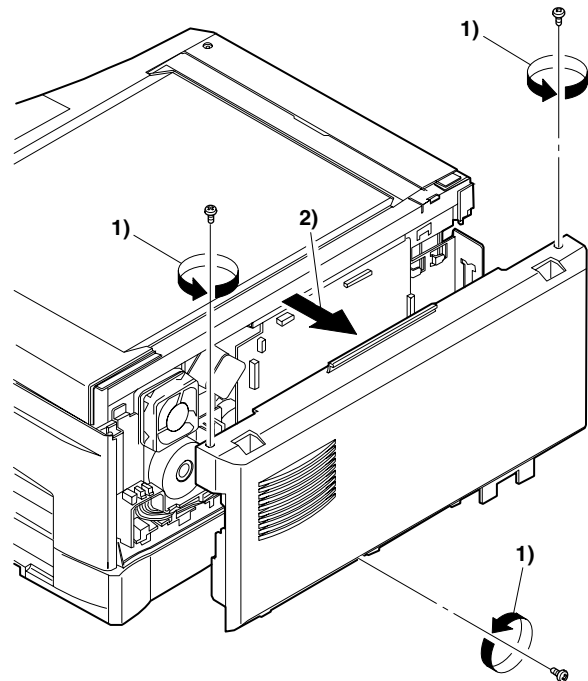
7. Rear frame section

A. List

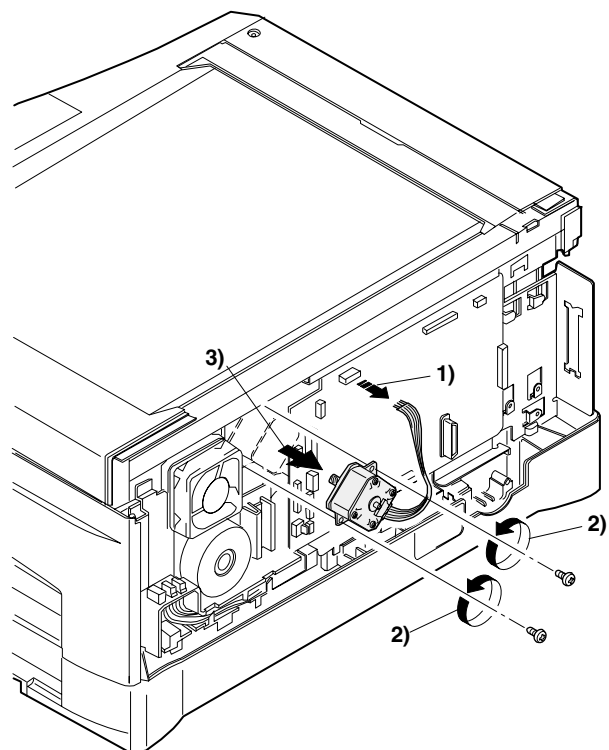
No.	Part name	Ref.
1	Mirror motor	
2	Main motor	
3	Exhaust fan motor	

B. Disassembly procedure

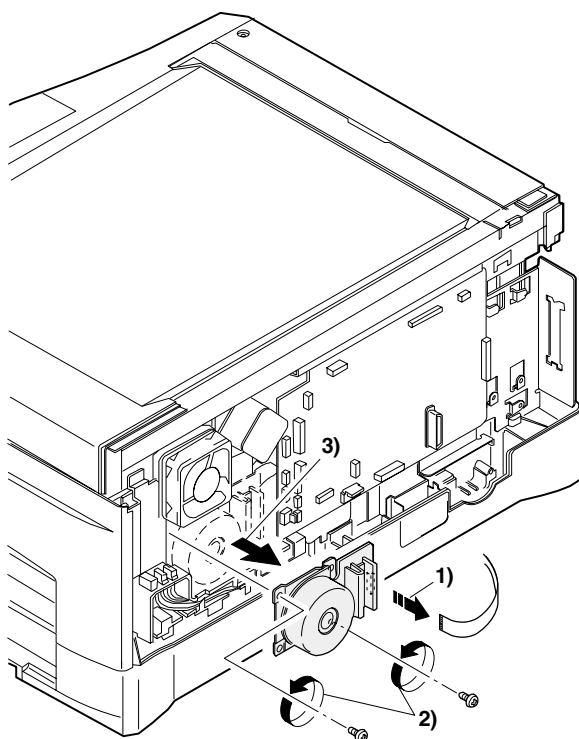
- (1) Remove three screws and remove the rear cabinet.



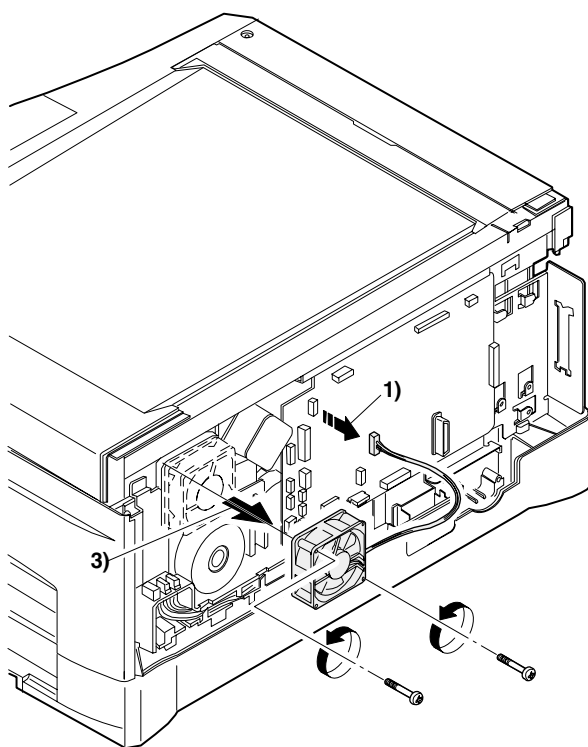
- (2) Remove two screws, the harness, and the mirror motor.



- (3) Remove two screws and one harness, and remove the main motor.



- (4) Remove two screws and one connector, and remove the exhaust fan motor.



C. Assembly procedure

For assembly, reverse the disassembly procedure.

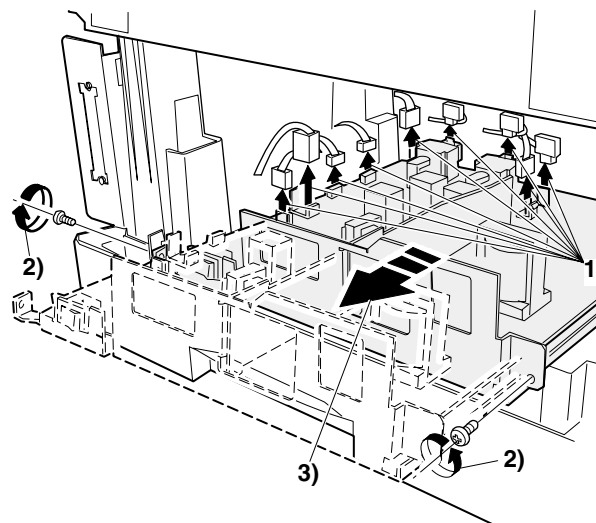
8. Power section

A. List

No.	Part name	Ref.
1	Power PWB	

B. Disassembly procedure

- (1) Remove two screws and one connector, and remove the power PWB.



C. Assembly procedure

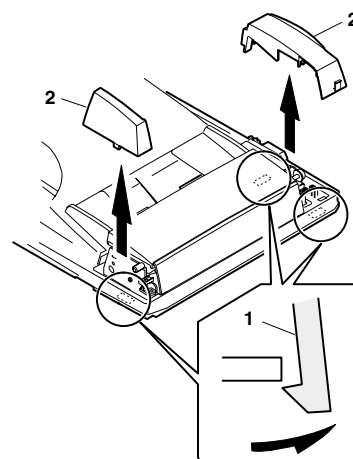
For assembly, reverse the disassembly procedure.

9. SPF section (DM-1500 only)

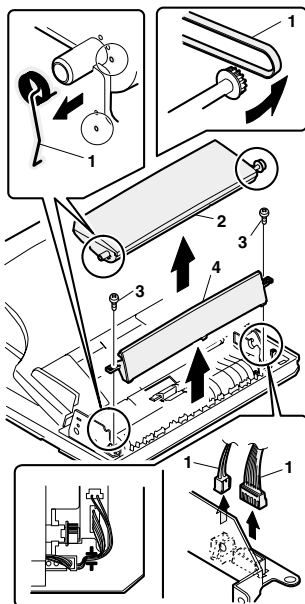
No.	Part name	Ref.
A	Sensor PWB	
B	Pickup solenoid	
C	Clutch	
D	Manual paper feed roller, pickup roller	
E	Belt	
F	SPF motor	
G	Paper entry sensor	
H	PS roller	
I	Paper exit roller	

Pickup unit removal

- 1) Remove three fixing pawls from the bottom of the machine.
2) Remove the front cover and the rear cover.



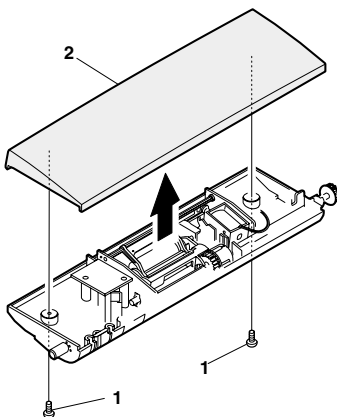
- 1) Remove the belt, the paper feed frame SP, and two harnesses.
- 2) Remove the pickup unit.



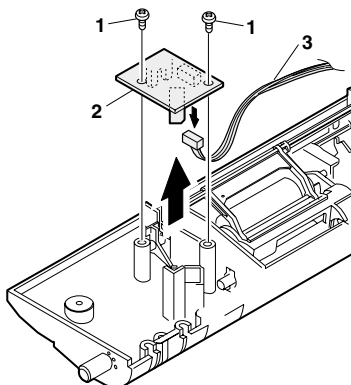
* When installing the parts, be careful of the hole position of the paper frame SP.

A. Sensor PWB

- 1) Remove two screws from the bottom of the pickup unit.
- 2) Remove the upper cover.

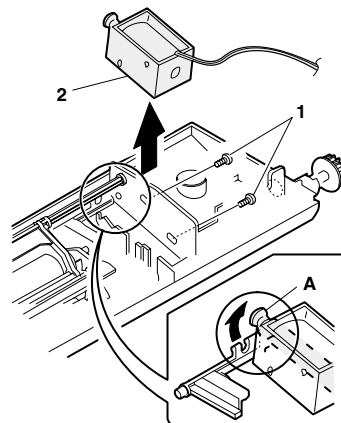


- 1) Remove two screws.
- 2) Remove the sensor PWB.
- 3) Remove the harness.



B. Pickup solenoid

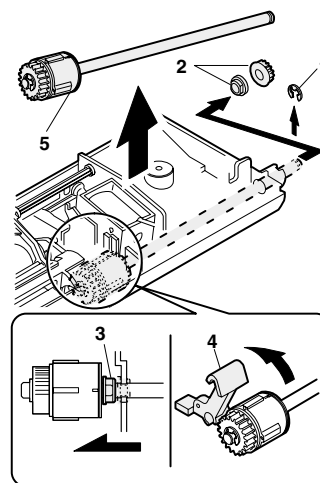
- 1) Remove two screws.
- 2) Remove the pickup solenoid



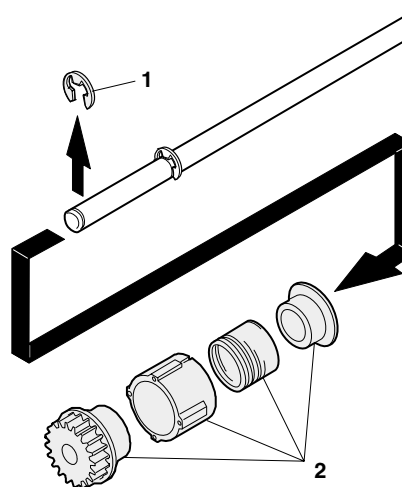
* When installing, hang iron core A on the solenoid arm.

C. Clutch

- 1) Remove the E-ring.
- 2) Remove the pulley and bush.
- 3) Slide the bush in the arrow direction.
- 4) Lift the clutch, and 5) remove the clutch.

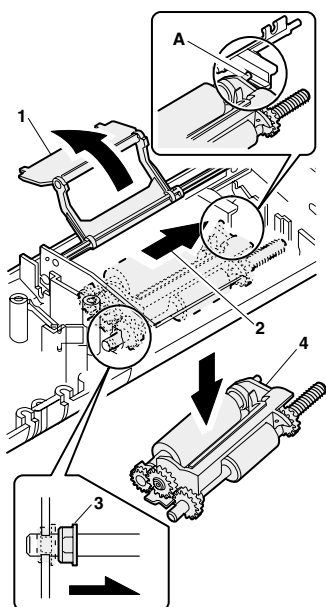


- 1) Remove the E-ring.
- 2) Remove the parts.



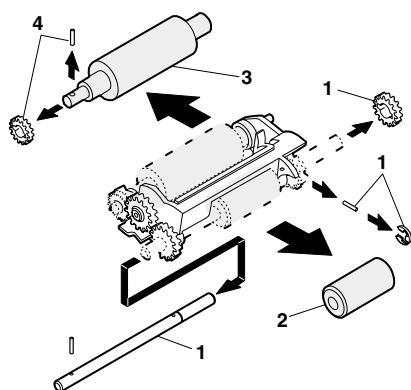
D. Manual paper feed roller, pickup roller

- 1) Lift the paper stopper.
- 2) Slide the takeup roller unit.
- 3) Slide the bush in the arrow direction.
- 4) Remove the takeup roller unit.



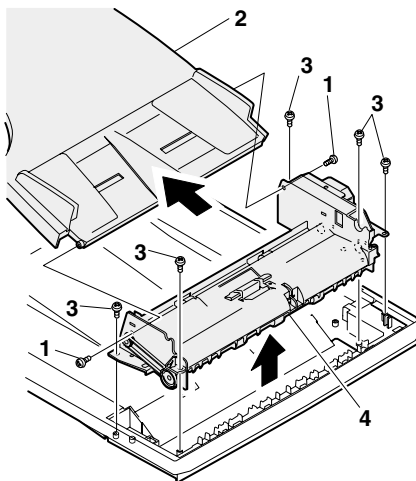
* When installing the takeup roller, hang the projection of the takeup roller unit on the solenoid arm.

- 1) Remove the parts.
- 2) Remove the manual paper feed roller.
- 3) Remove the pickup roller.
- 4) Remove the parts.



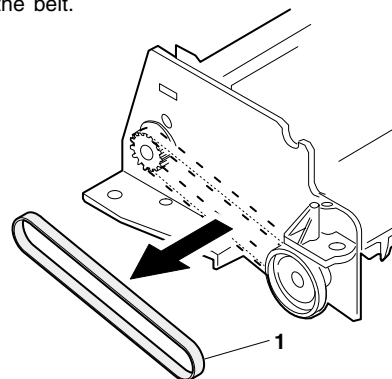
Transport unit removal

- 1) Remove two screws.
- 2) Remove the document tray unit.
- 3) Remove five screws.
- 4) Remove the transport unit.



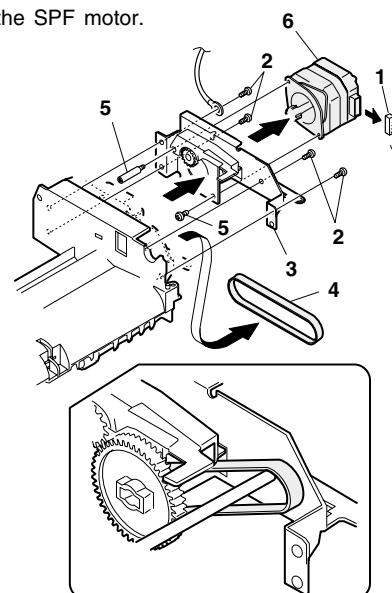
E. Belt

- 1) Remove the belt.



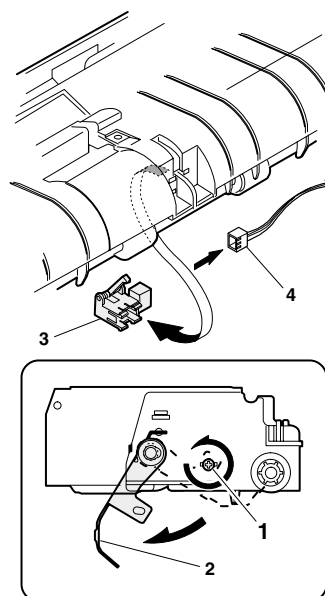
F. SPF motor

- 1) Remove the harness.
- 2) Remove four screws.
- 3) Remove the drive unit.
- 4) Remove the belt.
- 5) Remove two screws.
- 6) Remove the SPF motor.



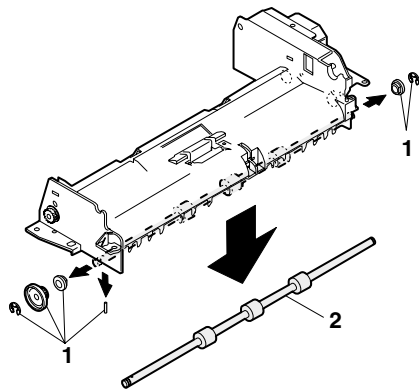
G. Paper entry sensor

- 1) Loosen the screw.
- 2) Open the paper exit PG.
- 3) Remove the paper entry sensor.
- 4) Remove the harness.



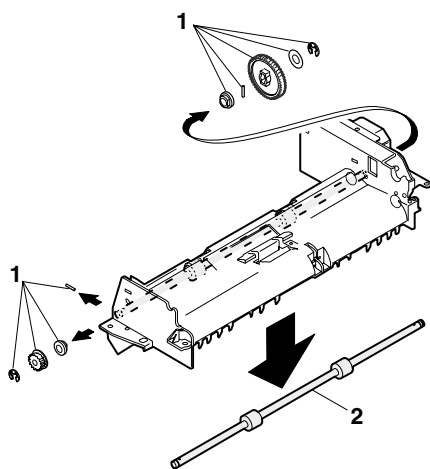
H. PS roller

- 1) Remove the parts.
- 2) Remove the PS roller.



I. Paper exit roller

- 1) Remove the parts.
- 2) Remove the paper exit roller.

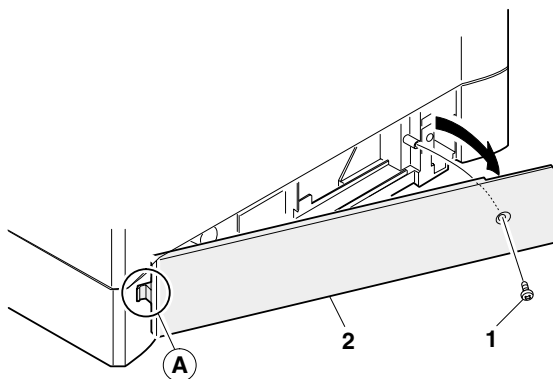


10. 2nd cassette section

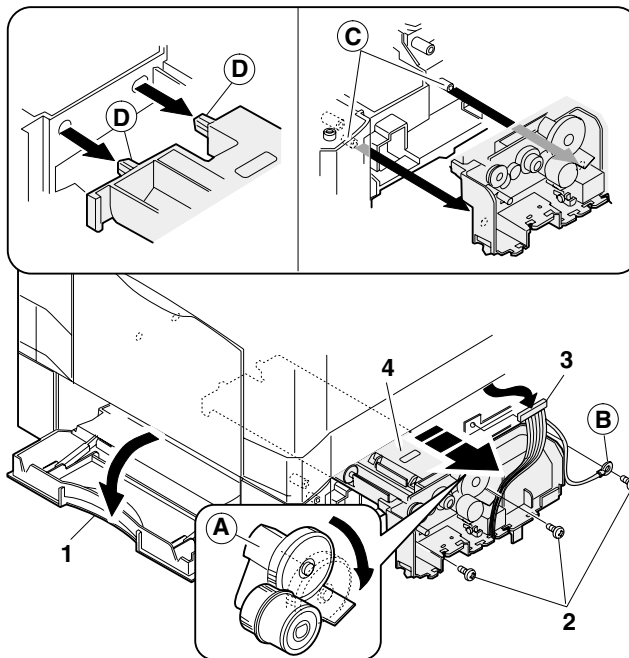
No.	Part name Ref.
A	Paper sensor
B	Cassette detection SW
C	Paper feed solenoid
D	Transport roller
E	Paper feed clutch
F	2nd page feed roller

Paper feed unit removal

- 1) Remove the screw.
 - 2) Remove the rear cover.
- * When installing, engage the pawl and install the unit.



- 1) Open the right cabinet.
- 2) Remove three screws.
- 3) Remove one connector.
- 4) While tilting down the 2nd connection arm A, pull and remove the paper feed unit toward you.

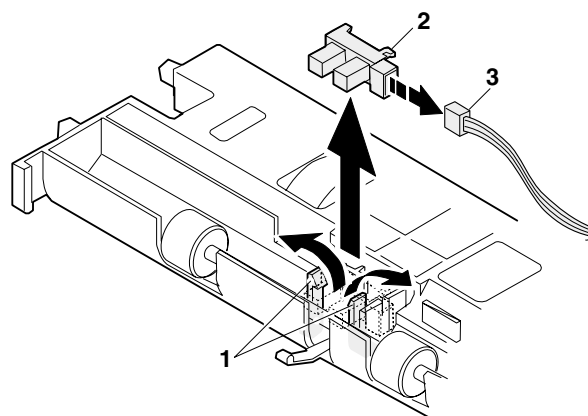


* When installing, securely insert two bosses C on the machine side and two bosses D on the paper feed unit side. Be sure to fix the earth B.

* Insert the 2nd page feed.

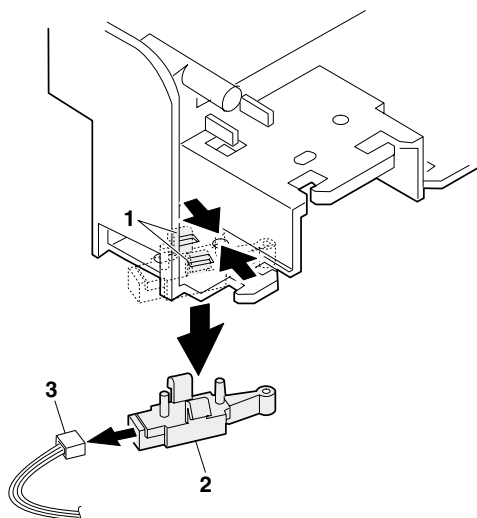
A. Paper sensor

- 1) Remove the pawl.
- 2) Remove the paper sensor.
- 3) Remove the harness.



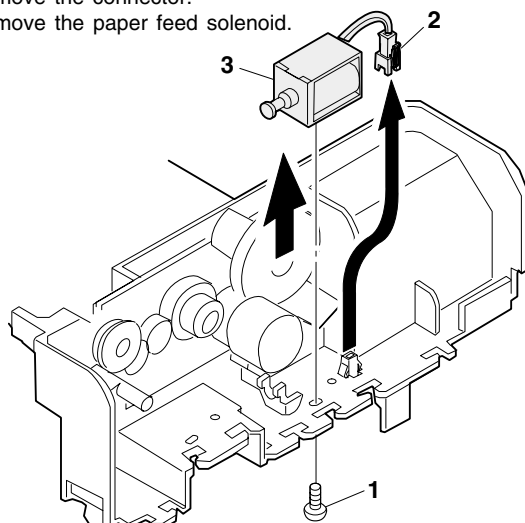
B. Cassette detection SW

- 1) Remove the pawl.
- 2) Remove the cassette detection SW.
- 3) Remove the harness.



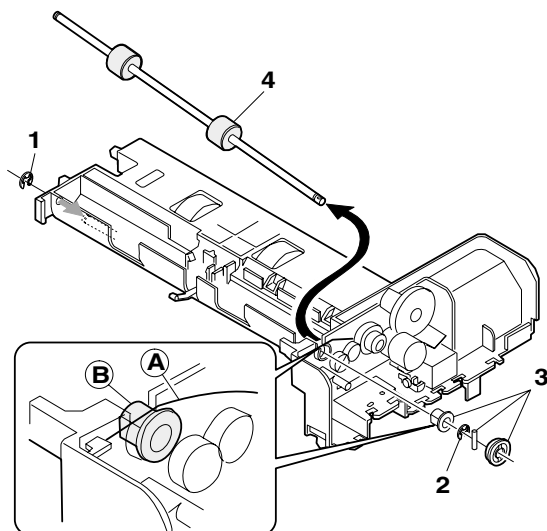
C. Paper feed solenoid

- 1) Remove the screw.
- 2) Remove the connector.
- 3) Remove the paper feed solenoid.



D. Transport roller

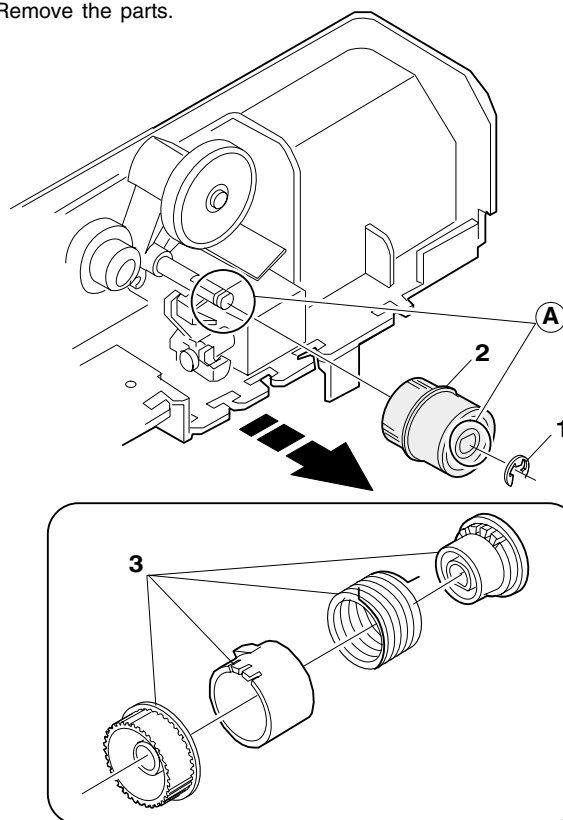
- 1) Remove two E-rings.
- 2) Remove the transport roller.



* Install so that the earth spring A is brought into contact over bearing B.

E. Paper feed clutch

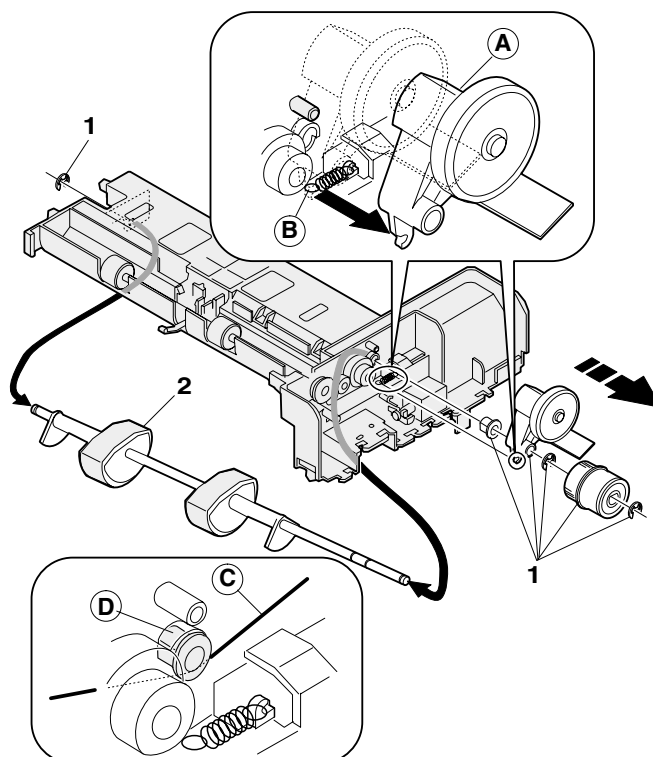
- 1) Remove the E-ring.
- 2) Remove the paper feed clutch.
- 3) Remove the parts.



* When installing, fit the cut surface A.

F. 2nd paper feed roller

- 1) Remove the E-ring and the parts.
- 2) Remove the 2nd paper feed roller.



* When installing, hang the 2nd connection arm on the 2nd connection arm SP B. Be sure to install so that the earth spring C is in contact under the bearing D.

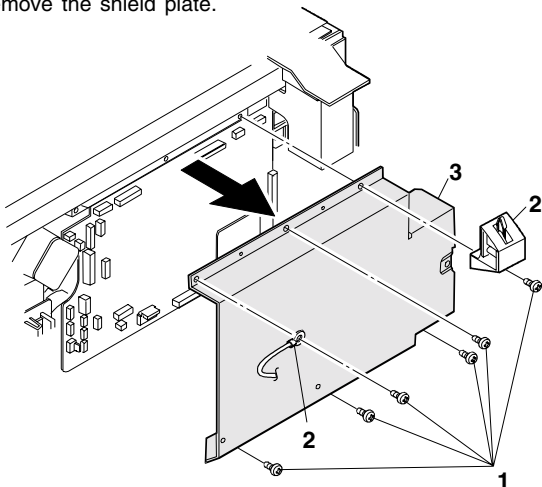
11. DUP motor section (DM-1505 only)

A. Remove the rear cabinet.

- 1) Remove four screws.
- 2) Remove the rear cabinet.

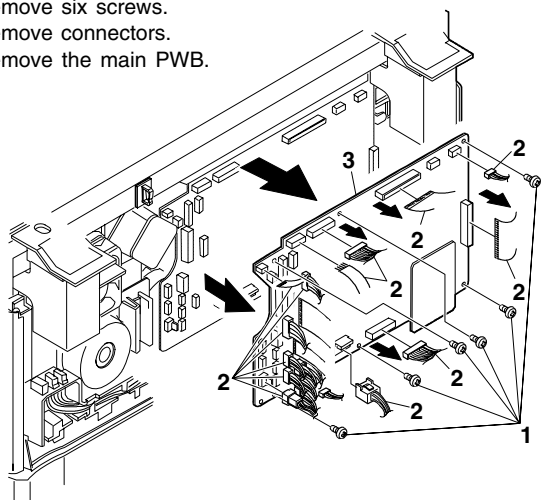
B. Remove the shield plate.

- 1) Remove six screws.
- 2) Remove the open/close detection unit, and the earth wire.
- 3) Remove the shield plate.



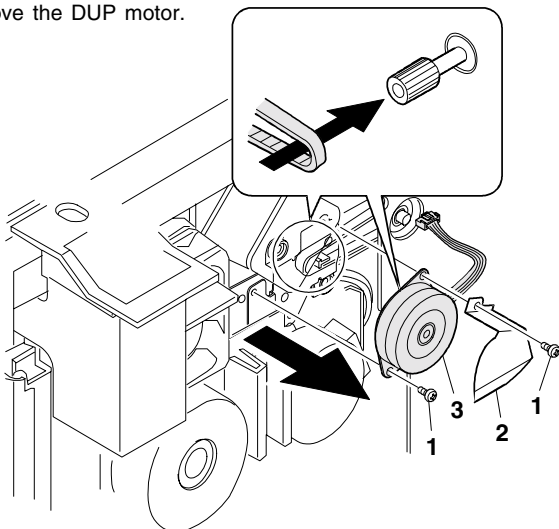
C. Remove the main PWB.

- 1) Remove six screws.
- 2) Remove connectors.
- 3) Remove the main PWB.



D. Remove the DUP motor.

- 1) Remove two screws.
- 2) Remove the DUP motor cover.
- 3) Remove the DUP motor.

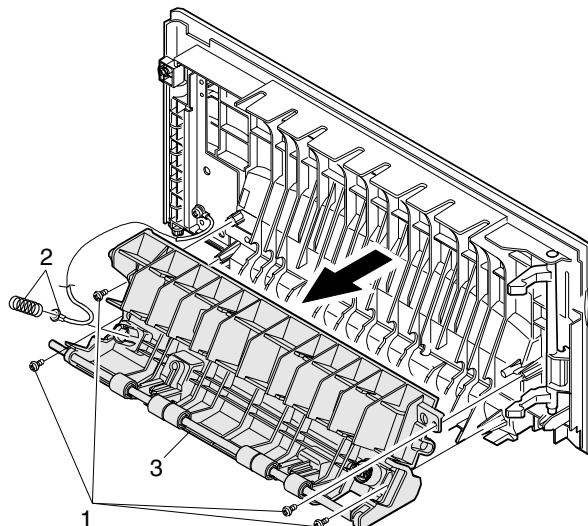


Note: When reassembling, be sure to engage the DUP motor gear with the belt on the main body side.

12. Reverse roller section (DM-1505 only)

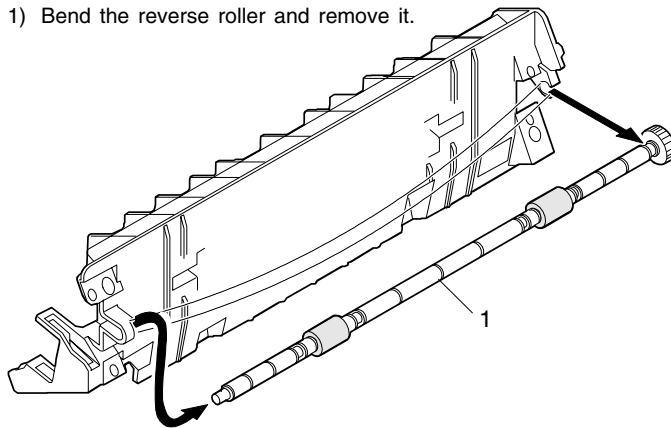
A. Remove the reverse unit.

- 1) Remove four screws
- 2) Remove the spring, and the earth wire
- 3) Remove the reverse unit.



B. Remove the reverse roller.

- 1) Bend the reverse roller and remove it.



13. RSPF section (DM-1505 only)

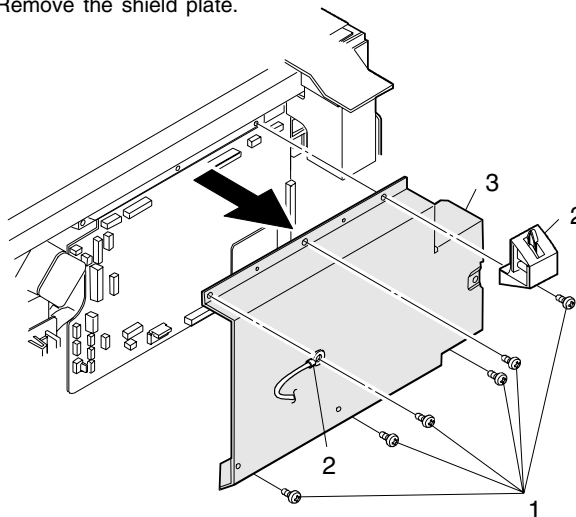
A. RSPF

(1) Remove the rear cabinet.

- 1) Remove four screws.
- 2) Remove the rear cabinet.

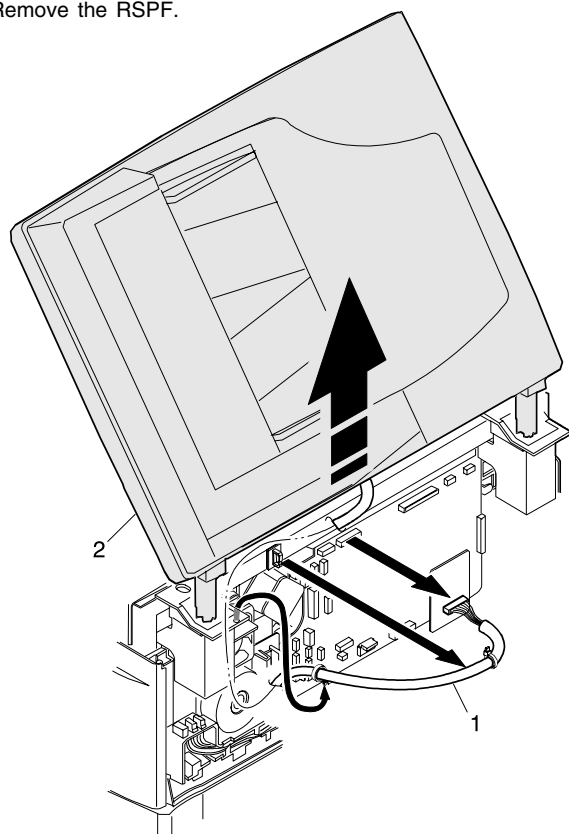
(2) Remove the shield plate.

- 1) Remove six screws.
- 2) Remove the open/close detection unit, and the earth wire.
- 3) Remove the shield plate.

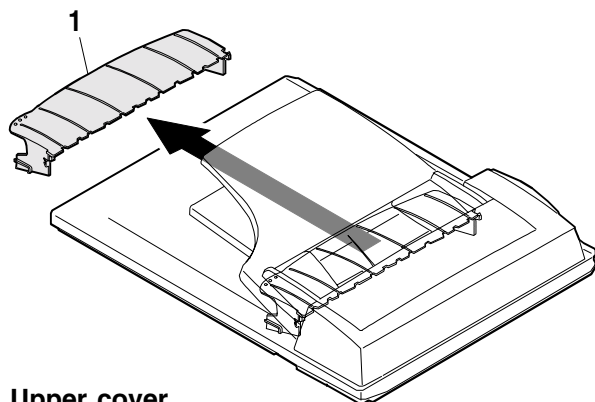


(3) Remove the RSPF.

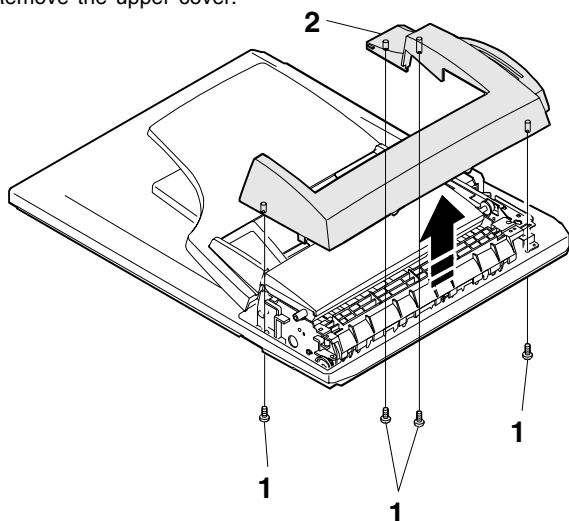
- 1) Remove the connector and the cable.
- 2) Remove the RSPF.

**B. Intermediate tray**

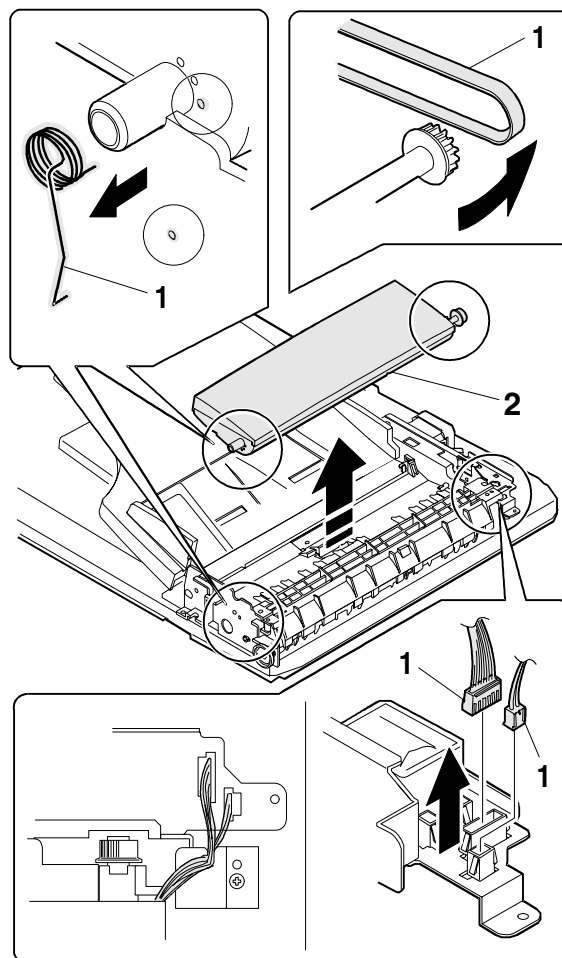
- 1) Remove the intermediate tray.

**C. Upper cover**

- 1) Remove four screws from the bottom of the main body.
- 2) Remove the upper cover.

**D. Pickup unit**

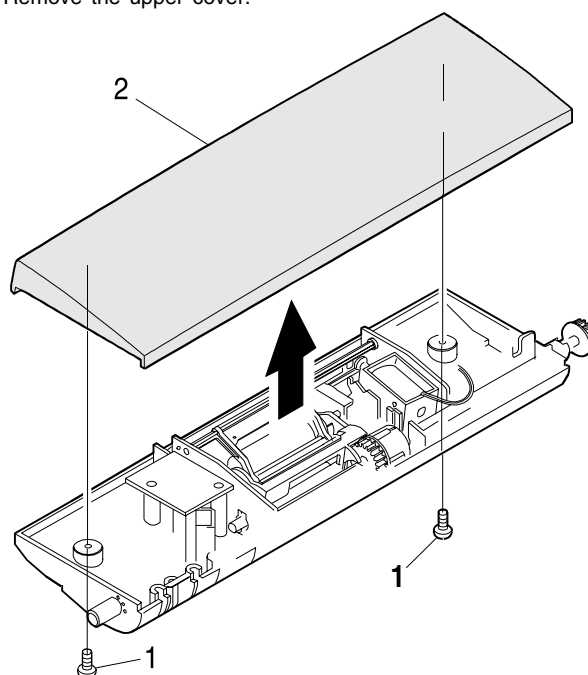
- 1) Remove the belt, the paper feed frame spring, and two harnesses.
- 2) Remove the pickup unit.



NOTE: When reassembling, be careful of the hole position for the paper feed frame spring.

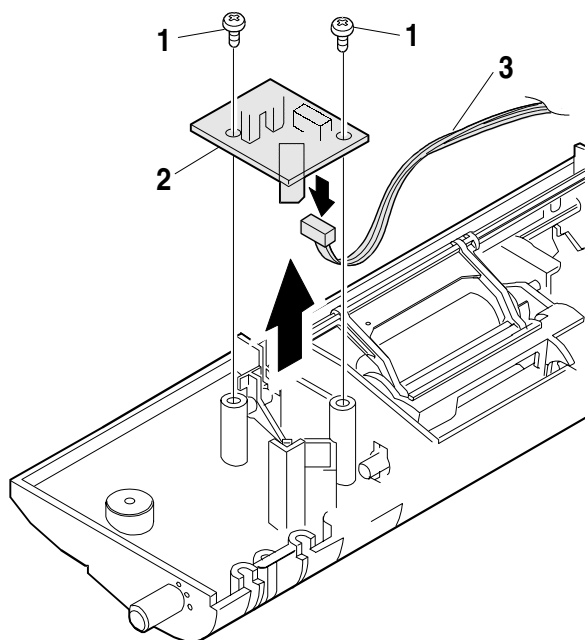
E. Upper cover of the pickup unit.

- 1) Remove two screws from the bottom of the pickup unit.
- 2) Remove the upper cover.



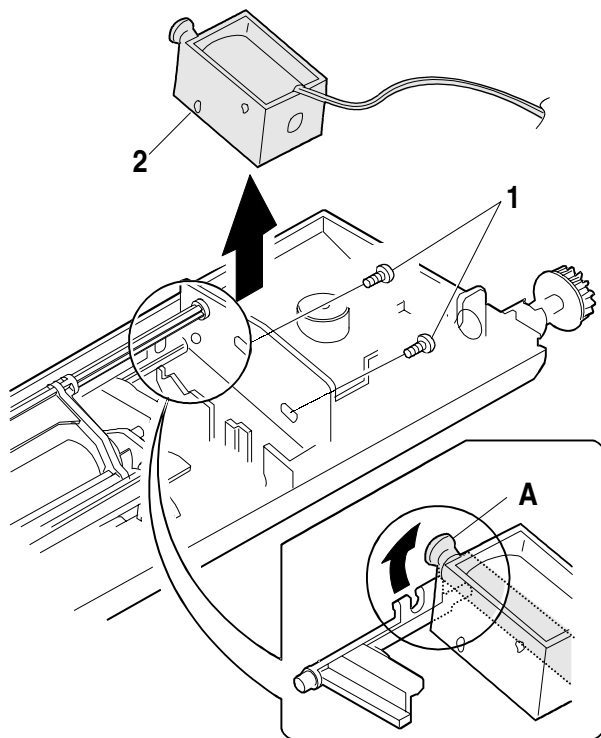
F. Sensor PWB

- 1) Remove two screws.
- 2) Remove the sensor PWB.
- 3) Remove the harness.



G. Pickup solenoid

- 1) Remove two screws.
- 2) Remove the pickup solenoid.

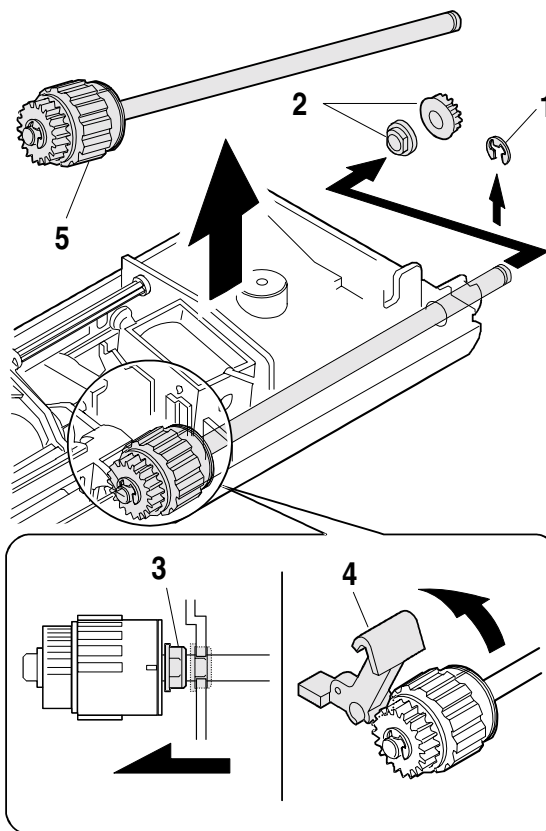


NOTE: When reassembling, hang the iron core on the solenoid arm.

H. Clutch

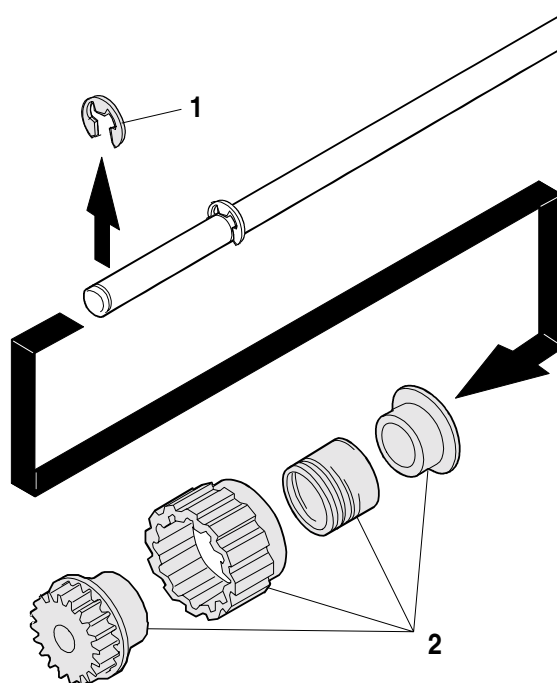
(1) Remove the clutch unit.

- 1) Remove the E-ring.
- 2) Remove the pulley and the bush.
- 3) Slide the bush in the arrow direction.
- 4) Lift the clutch pawl.
- 5) Remove the clutch unit.



(2) Remove the clutch

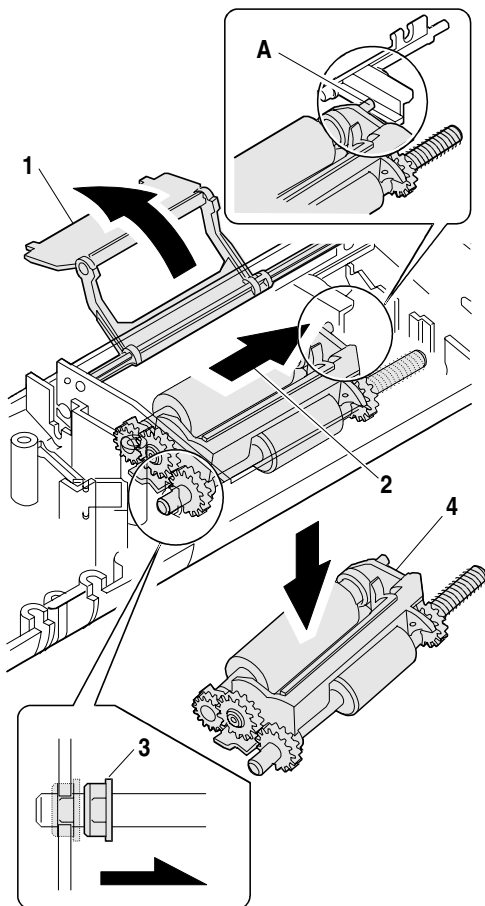
- 1) Remove the E-ring.
- 2) Remove the parts.



I. Manual paper feed roller, pickup roller

(1) Remove the pickup unit.

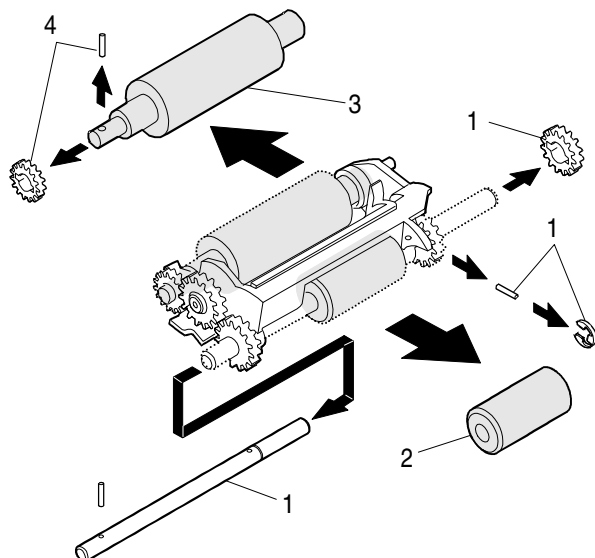
- 1) Lift the paper stopper.
- 2) Slide the takeup roller unit.
- 3) Slide the bush in the arrow direction.
- 4) Remove the takeup roller.



NOTE: When reassembling, hang the convex portion of the roller unit on the solenoid arm.

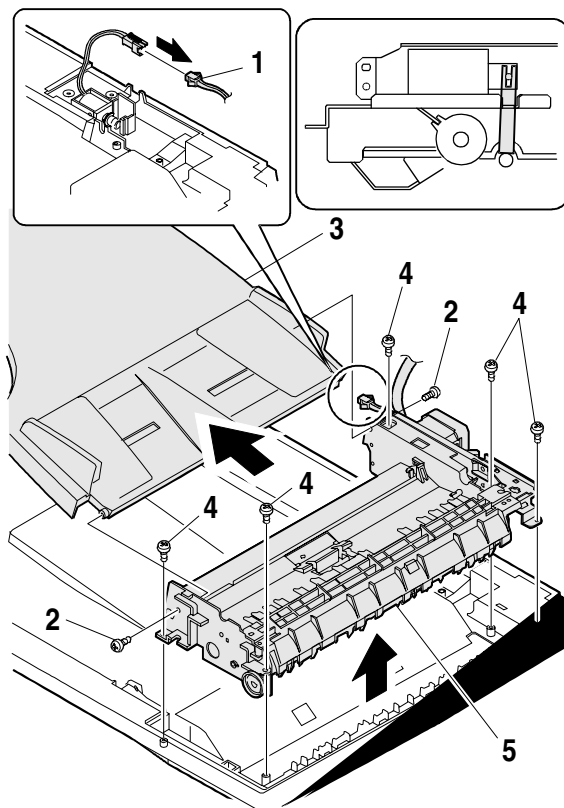
(2) Remove the Manual paper feed roller, pickup roller.

- 1) Remove the parts.
- 2) Remove the manual paper feed roller.
- 3) Remove the pickup roller.
- 4) Remove the parts.



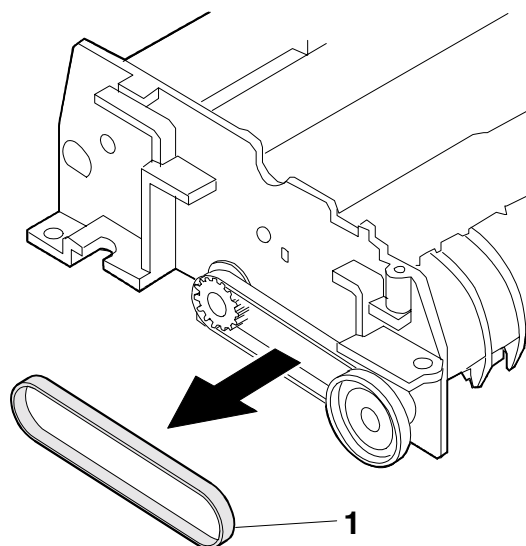
J. Transport unit removal

- 1) Remove the harness.
- 2) Remove two screws.
- 3) Remove the document tray unit.
- 4) Remove five screws.
- 5) Remove the transport unit.



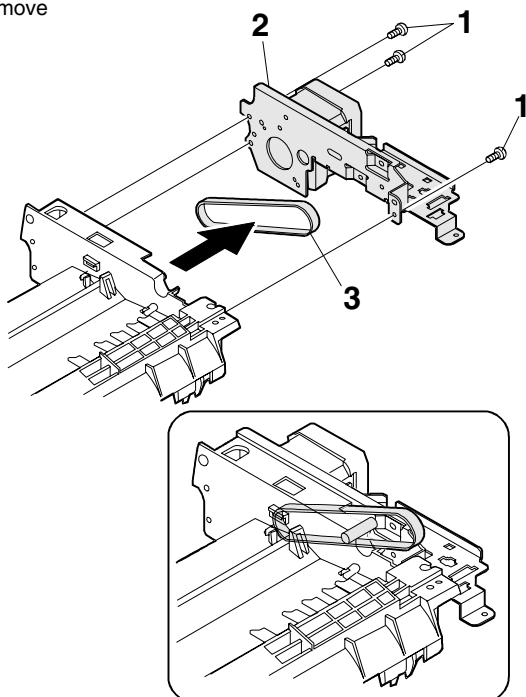
K. Belt 1

- 1) Remove the belt.



L. Belt 2

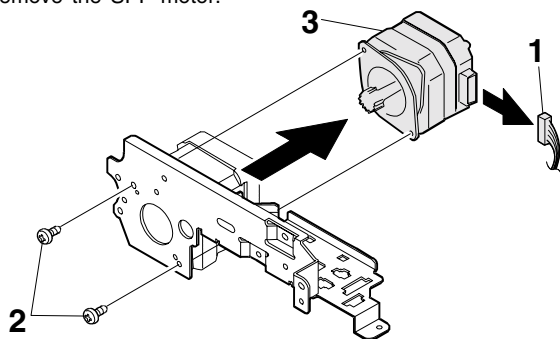
- 1) Remove three screws.
- 2) Remove the drive unit.
- 3) Remove



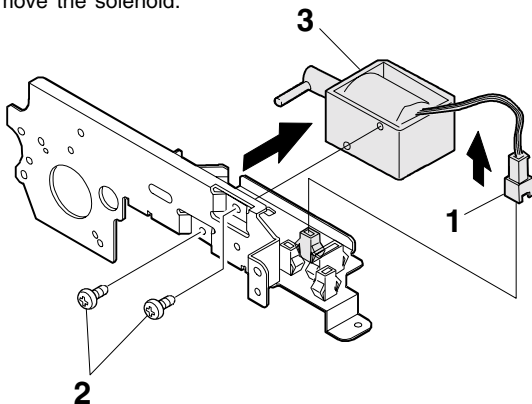
NOTE: When reassembling, hang the belt on the boss.

M. SPF motor

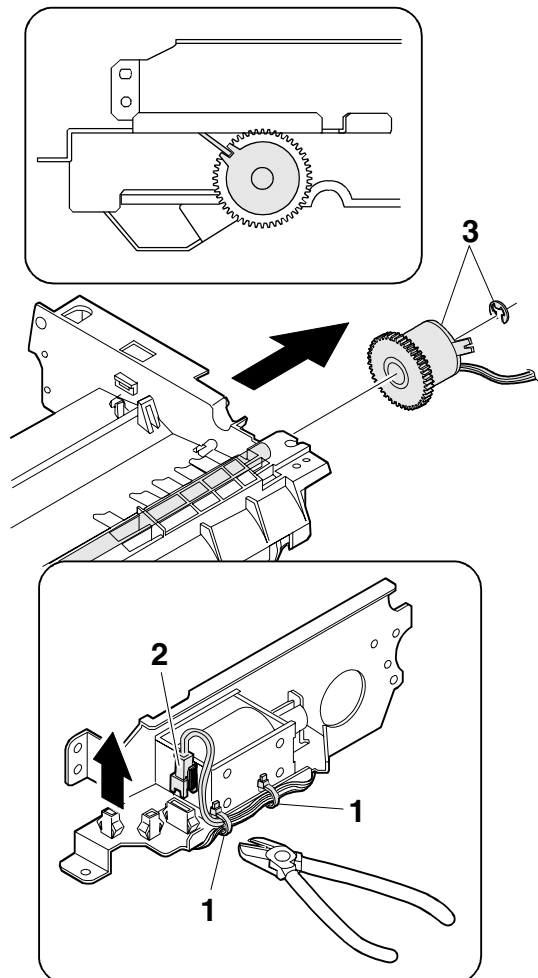
- 1) Remove the harness.
- 2) Remove two screws.
- 3) Remove the SPF motor.

**N. Solenoid**

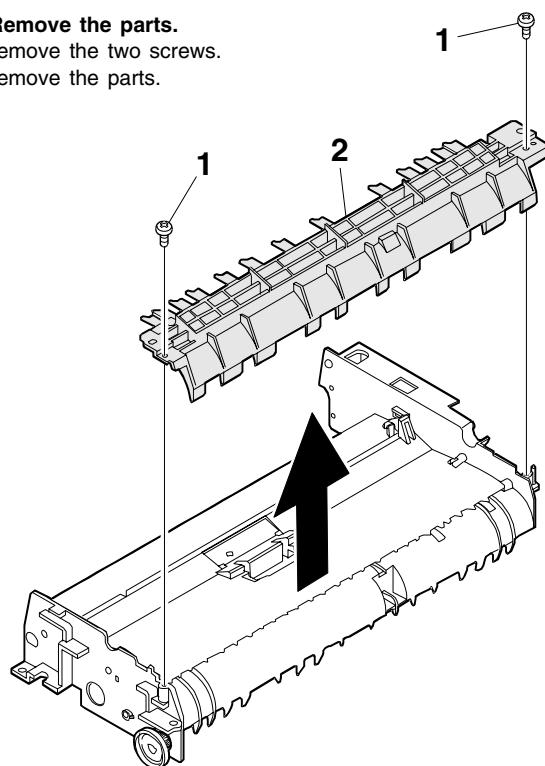
- 1) Remove the harness.
- 2) Remove two screws.
- 3) Remove the solenoid.

**O. Clutch**

- 1) Cut the band with nippers.
- 2) Remove the harness.
- 3) Remove the clutch.

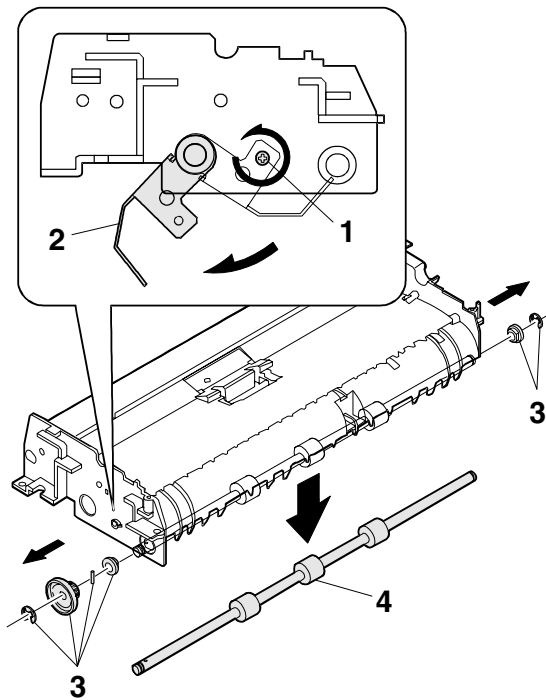
**P. PS roller**

- (1) Remove the parts.
- 1) Remove the two screws.
- 2) Remove the parts.

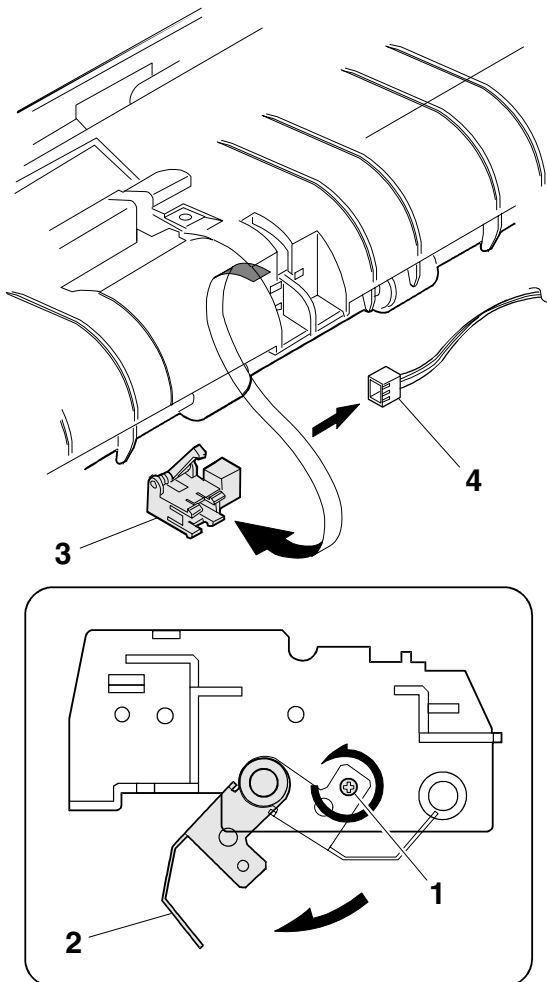


(2) Remove the PS roller.

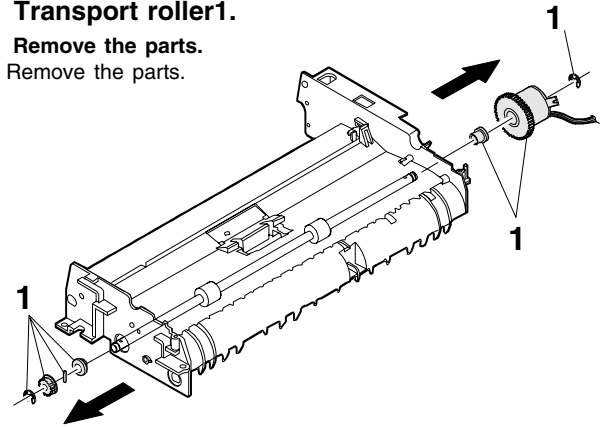
- 1) Loosen the screw.
- 2) Open the paper exit PG.
- 3) Remove the parts.
- 4) Remove the PS roller.

**Q. Paper entry sensor**

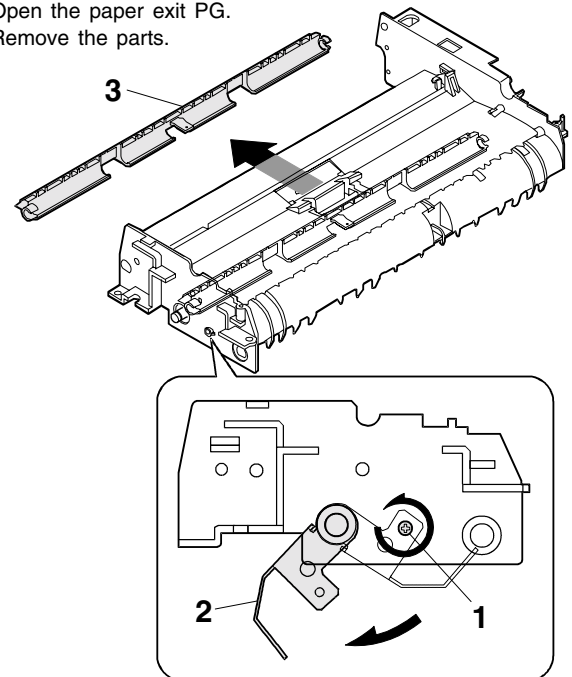
- 1) Loosen the screw.
- 2) Open the paper exit PG.
- 3) Remove the paper entry sensor.
- 4) Remove the harness.

**R. Transport roller1.****(1) Remove the parts.**

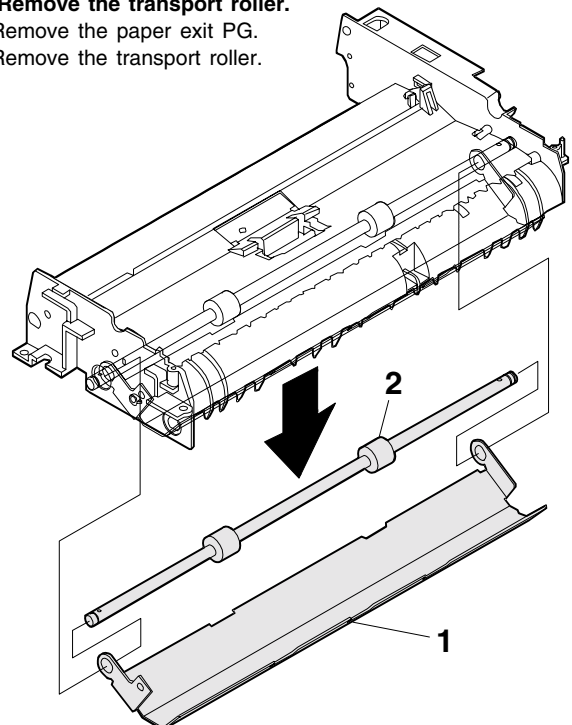
- 1) Remove the parts.

**(2) Remove the parts.**

- 1) Loosen the screw.
- 2) Open the paper exit PG.
- 3) Remove the parts.

**(3) Remove the transport roller.**

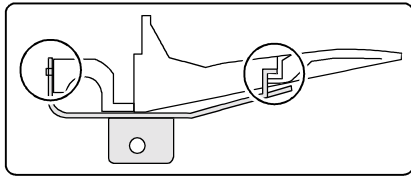
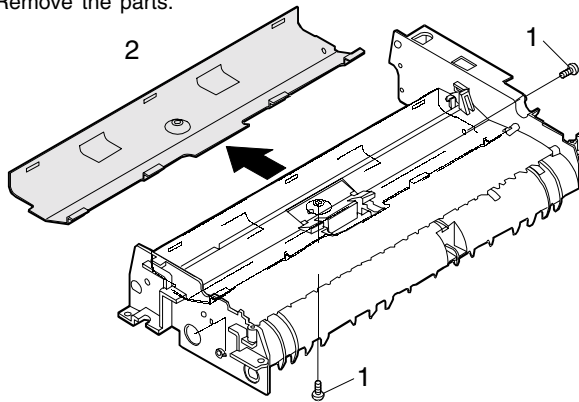
- 1) Remove the paper exit PG.
- 2) Remove the transport roller.



S. Paper exit roller

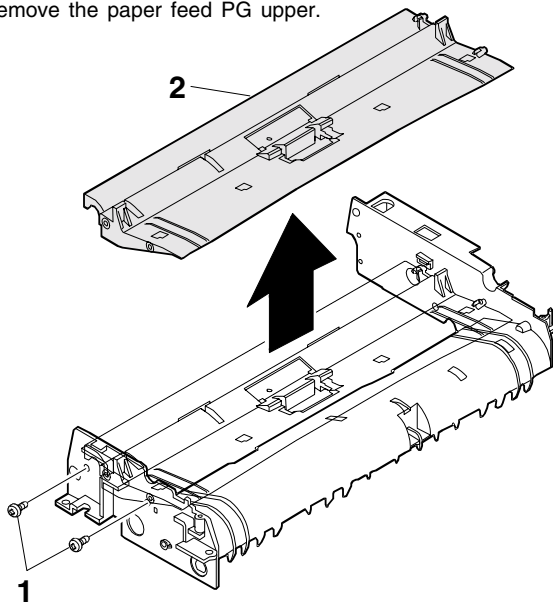
(1) Remove the parts.

- 1) Remove two screws.
- 2) Remove the parts.



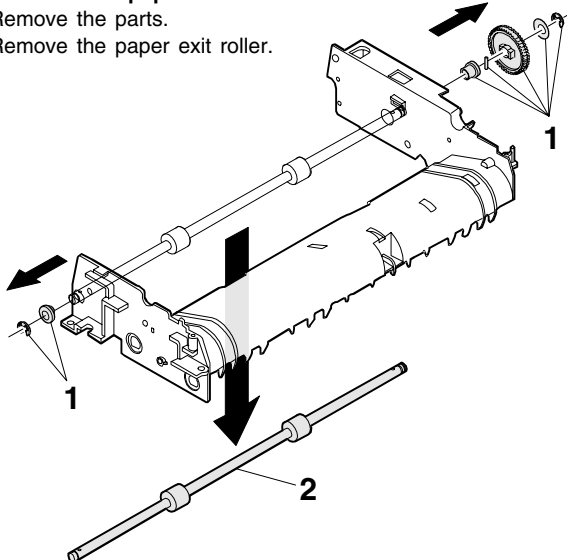
(2) Remove the paper feed PG upper.

- 1) Remove two screws.
- 2) Remove the paper feed PG upper.



(3) Remove the paper exit roller.

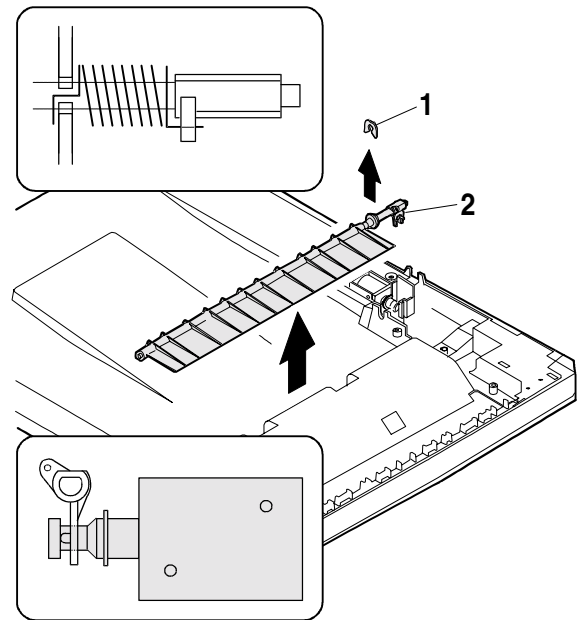
- 1) Remove the parts.
- 2) Remove the paper exit roller.



T. Solenoid

(1) Remove the reverse gate

- 1) Remove the ring
- 2) Remove the reverse gate

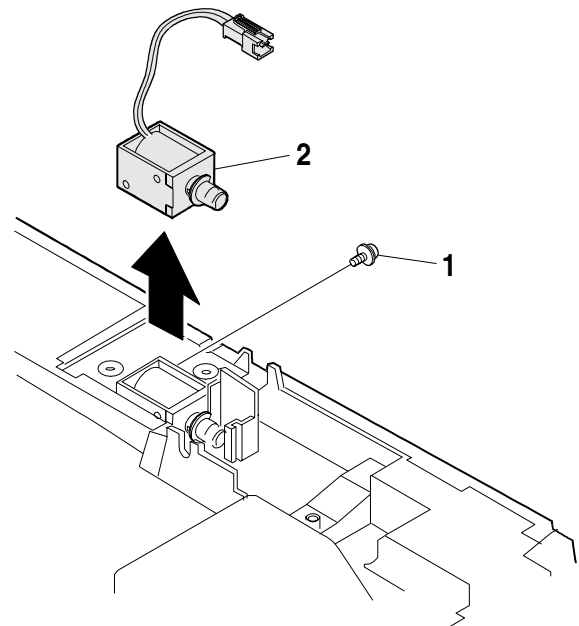


NOTE: When reassembling, be careful of the groove and the hole positions of the spring.

NOTE: When reassembling, hang 2) on the solenoid.

(2) Remove the solenoid.

- 1) Remove the screw.
- 2) Remove the solenoid.



[8] ADJUSTMENTS

1. Optical section

A. Image distortion adjustment

There are following two types of image distortion.

- Horizontal image distortion
- Vertical image distortion

In this machine, the image distortion is adjusted by changing the parallelism of mirrors (copy lamp unit, No. 2/3 mirror unit).

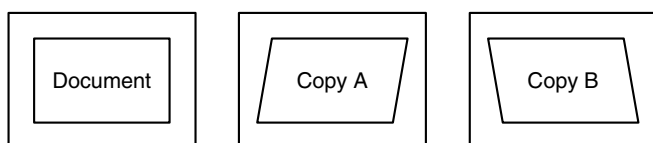
(1) Horizontal image distortion adjustment

a. Summary

Parallelism of mirrors can be made by installing the copy lamp unit and No. 2/3 mirror unit to the reference position. However, it must be checked by making a copy, and must be adjusted if necessary.

b. Cases when the adjustment is required

- 1) When the copy lamp unit and No.2/3 mirror unit are disassembled or their part is replaced.
- 2) When the copy lamp unit and No.2/3 mirror unit drive section is disassembled or its part is replaced.
- 3) When the copy image is distorted as shown below:

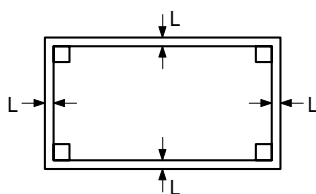


c. Necessary tools

- Screwdriver (+)
- Hex wrench
- Scale
- Test chart for distortion adjustment (Make a chart shown below by yourself.)

Draw a rectangle on a paper (B4 or 8 1/2" × 14") as shown below.

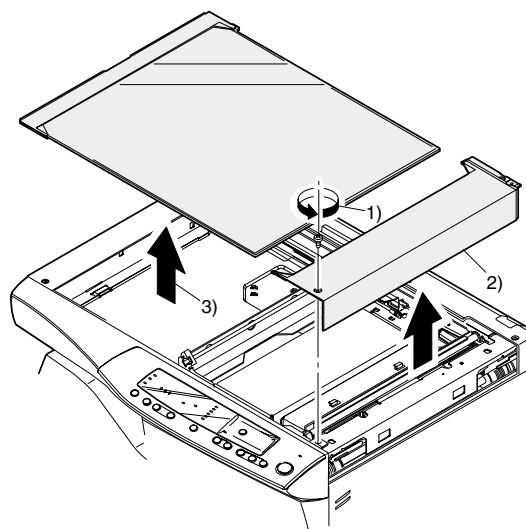
Be sure to make four right angles.



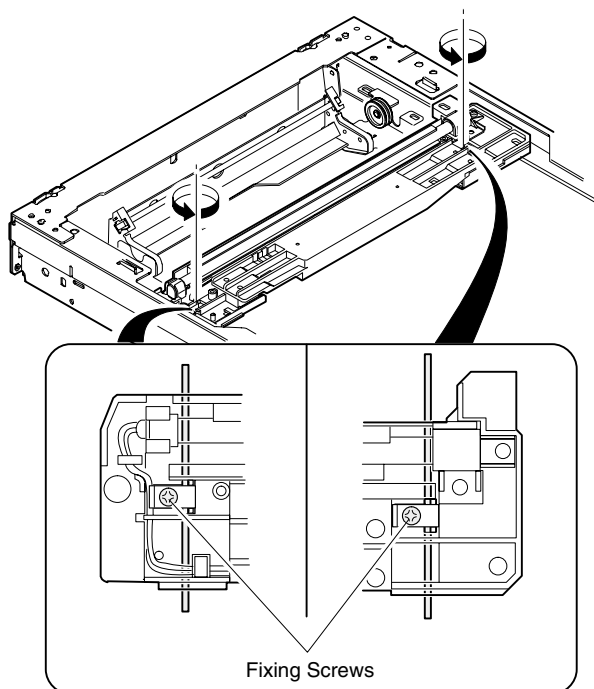
L = 10mm

d. Adjustment procedure

- 1) Remove the right cabinet (manual paper feed unit), the document reference plate.
- 2) Remove the document glass.



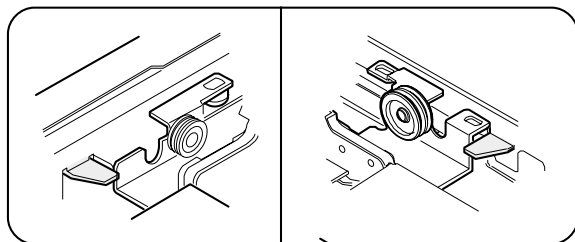
- 3) Loosen the fixing screw of the copy lamp unit wire.



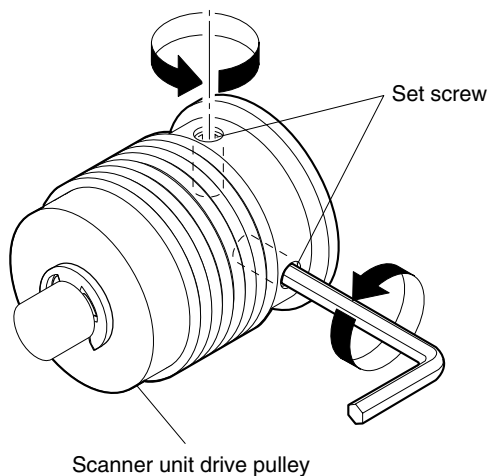
- 4) Manually turn the copy lamp unit/No.2/3 mirror unit drive gear to bring No.2/3 mirror unit into contact with No.2/3 mirror unit positioning plate. When No.2/3 mirror unit makes contact with No.2/3 mirror unit positioning plate in the rear frame side simultaneously, the mechanical parallelism of No.2/3 mirror unit is proper.

If one side of No.2/3 mirror unit makes contact with No.2/3 mirror unit positioning plate and the other side does not, the parallelism is improper.

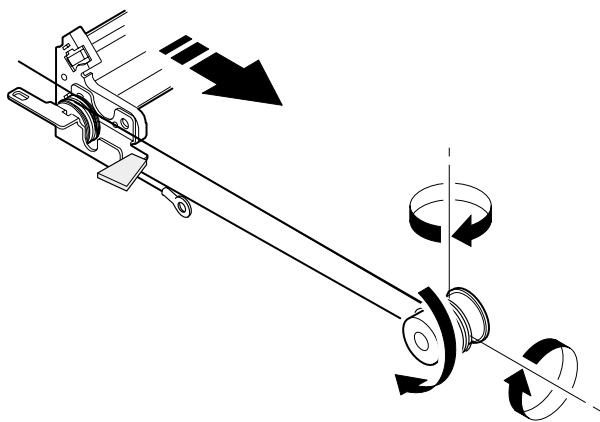
If the parallelism is improper, perform the procedure of step 5).



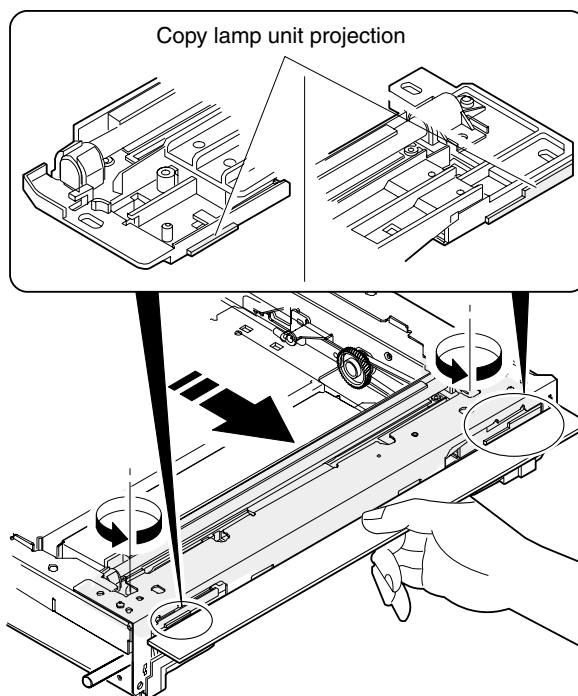
- 5) Loosen the copy lamp unit/No.2/3 mirror unit drive pulley setscrew in the side where No.2/3 mirror unit does not make contact with No.2/3 mirror unit positioning plate.



- 6) Without moving the copy lamp unit/No.2/3 mirror unit drive pulley shaft, manually turn the copy lamp unit/No.2/3 mirror unit drive pulley in the same direction of the loosened setscrew. When it makes contact with No.2/3 mirror unit positioning plate, tighten and fix the setscrew.



- 7) Manually turn the copy lamp unit/No.2/3 mirror unit drive gear to bring No.2/3 mirror unit into contact with the positioning plate, and perform the procedure of step 4). Repeat procedures of steps 4) to 7) until the parallelism of No.2/3 mirror unit is properly set.
- 8) With No.2/3 mirror unit positioning plate in contact with No.2/3 mirror unit, bring the copy lamp unit into contact with the right frame and fix the copy lamp unit to the drive wire. Procedures 1) to 8) are for adjustment of mechanical horizontal parallelism. The copy lamp unit and No.2/3 mirror are fixed to the specified positions and the mechanical horizontal parallelism of No.2/3 mirror is adjusted. Then the optical horizontal parallelism must be adjusted in the following procedures.



- 9) Set the image distortion check chart on the document table, and make a reduction copy (75%) on an A4 or 11" × 8 1/2" paper with the document cover open.

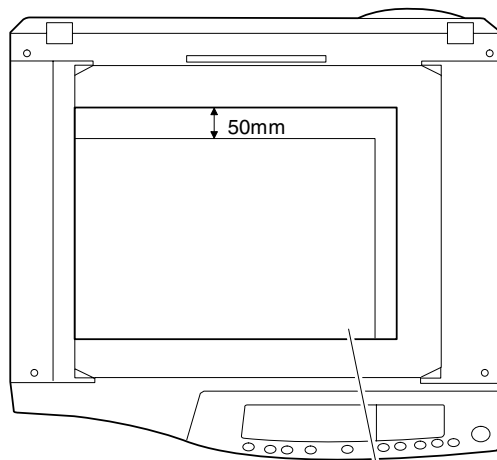
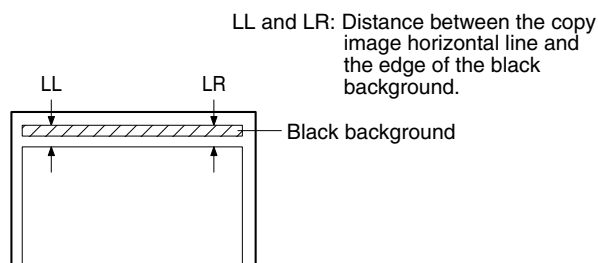
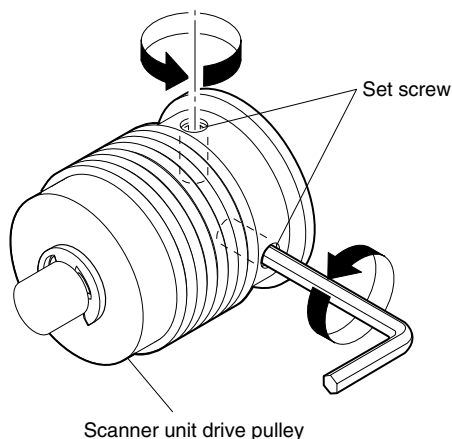


Image distortion check chart

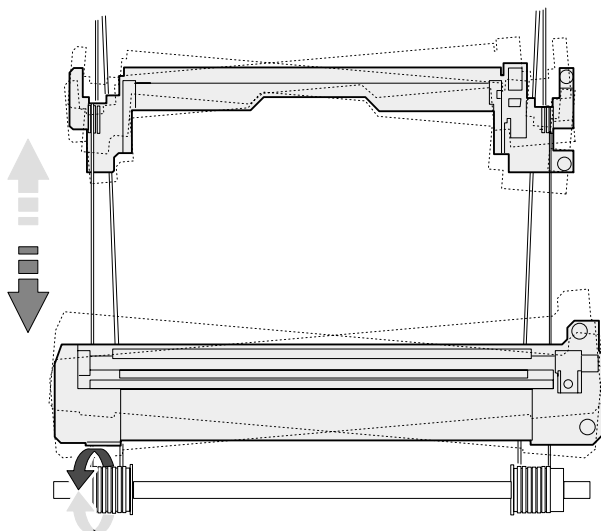
- 10) Check the horizontal image distortion.
If $LL = LR$, there is no horizontal distortion



- 11) If LL is not equal to LR , perform the following procedure.
Loosen the setscrew of the copy lamp unit/No.2/3 mirror unit drive pulley in the front or the rear frame.



- 12) Without moving the copy lamp unit/No.2/3 mirror unit drive pulley shaft, manually turn the copy lamp unit/No.2/3 mirror unit drive pulley whose setscrew was loosened, and adjust the parallelism of copy lamp unit/No.2/3 mirror unit.



- 13) Tighten the set screw of the copy lamp unit/No.2/3 mirror unit drive pulley.
14) Check the image distortion in the same manner as step 10). Repeat procedures 11) to 14) until horizontal image distortion is eliminated.

(2) Vertical image distortion adjustment

a. Summary

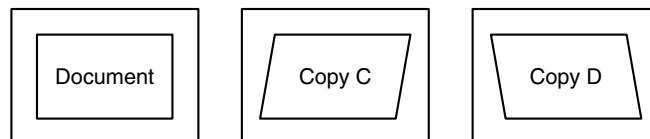
In this adjustment, the left and right balance is adjusted by changing the left and right balance of the No. 2 scanner unit frame on the front frame side.

b. Note

- Horizontal image distortion adjustment

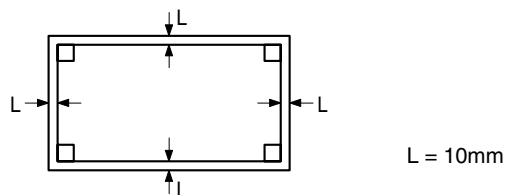
c. Cases when the adjustment is required

- 1) When the copy lamp unit/No.2/3 mirror unit drive section is disassembled or its part is replaced.
- 2) When the copy image is distorted as follows:



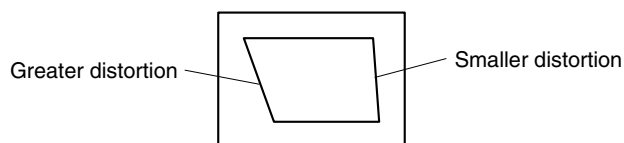
d. Necessary tools

- Screwdriver (+)
- Screwdriver (-)
- Scale
- Test chart for distortion adjustment (Make by yourself.)
Draw a rectangle on A4 or 8 1/2" × 11" paper as shown below:
Be sure to make four right angles.

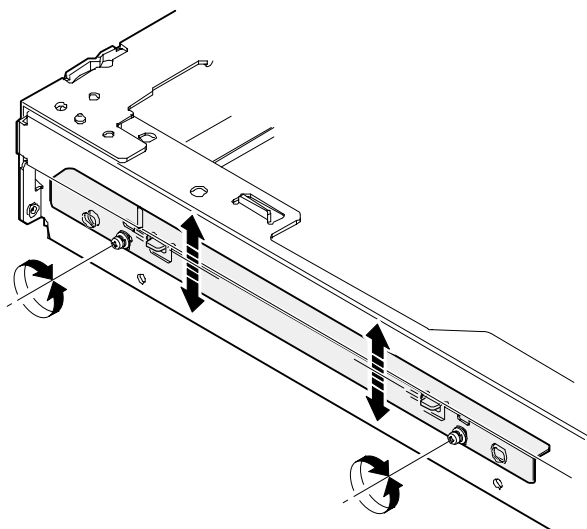


e. Adjustment procedure

- 1) Set the test chart for image distortion adjustment on the document glass, and make a normal copy on a paper of A4 or 8 1/2" × 11".
- 2) Check image distortion in the right and the left sides.
If the both vertical lines are in parallel with each other, the right-left distortion balance is proper. (However, there may be some distortion.)
If all the four angles are right angles, there is no distortion and the following procedures are not required.



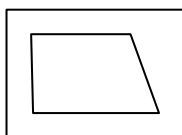
- 3) If the right-left distortion balance is improper, loosen the fixing screw of No.2/3 mirror unit rail to change and adjust the right-left balance of No.2/3 mirror unit rail.



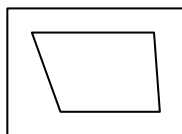
(Note)

If the distortion in the lead edge side (when viewed in the paper transport direction) is greater, change the height of the left rail of No.2/3 mirror unit.

If the distortion in the rear edge side (when viewed in the paper transport direction) is greater, change the height of the right rail of No.2/3 mirror unit.

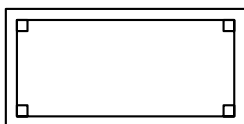


Change the height of the right side of the rail.



Change the height of the left side of the rail.

- 4) Make a copy to check the vertical image distortion.
If the four angles are right angles, the adjustment is completed.



B. Copy magnification ratio adjustment

The copy magnification ratio must be adjusted in the main scanning direction and in the sub scanning direction. To adjust, use SIM 48-1.

(1) Outline

The main scanning (front/rear) direction magnification ratio adjustment is made automatically or manually.

Automatic adjustment: The width of the reference line marked on the shading correction plate is scanned to perform the main scanning (front/rear) direction magnification ratio adjustment automatically.

Manual adjustment: The adjustment is made by manual key operations. (In either of the automatic and manual adjustments, the zoom data register set value is changed for adjustment.)

The magnification ratio in the sub scanning direction is adjusted by changing the mirror base (scanner) scanning speed.

(2) Main scanning direction magnification ratio adjustment

a. Note

Before performing this adjustment, the following adjustments must have been completed. If not, this adjustment cannot be performed properly.

- Image distortion adjustment
- The lens unit must be installed in the reference position.

b. Cases when the adjustment is required

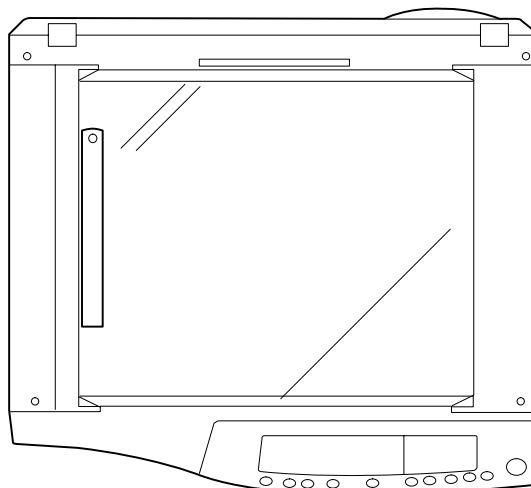
- 1) When the lens and the mirror unit are disassembled or the part is replaced.
- 2) When the copy lamp unit/No.2/3 mirror unit drive section is disassembled or the part is replaced.
- 3) When the main PWB is replaced.
- 4) When the EEPROM in the main PWB is replaced.
- 5) When "U2" trouble occurs.
- 6) When the copy image distortion adjustment is performed.

c. Necessary tools

- Screwdriver (+)
- Scale

d. Adjustment procedure

- 1) Set the scale vertically on the document table. (Use a long scale for precise adjustment.)



- 2) Set the copy magnification ratio to 100%.
- 3) Make a copy on A4 or 8½" × 11" paper.

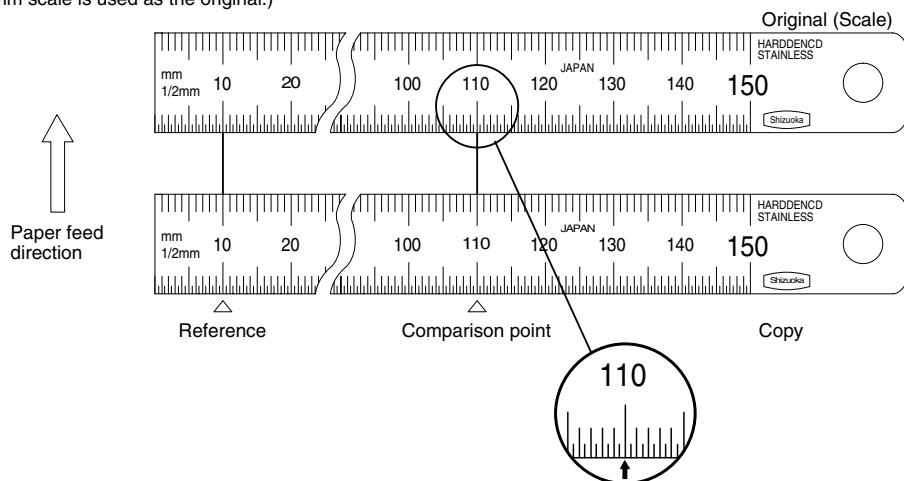
- 4) Measure the length of the copied scale image.

- 5) Calculate the main scanning direction magnification ratio.

Main scanning direction magnification ratio

$$= \frac{\text{Copy image dimensions}}{\text{Original dimension}} \times 100 (\%)$$

(When a 100mm scale is used as the original.)



- 6) Check that the copy magnification ratio is within the specified range. If it is not within the specified range, perform the following procedures.
- 7) Execute SIM 48-1 to select the main scanning direction copy magnification ratio adjustment mode.
To select the adjustment mode, use the copy mode select key.

In the case of the automatic adjustment, when the PRINT switch is pressed, the mirror base unit moves to the white plate for shading to scan the width of the reference line, calculating the correction value and displaying and storing this value.
After execution of the automatic adjustment, go out from the simulation mode and make a copy to check the magnification ratio.
If the magnification ratio is not in the specified range ($100 \pm 1.0\%$), manually adjust as follows.

Adjustment mode	Lighting lamp
Main scanning direction auto copy magnification ratio adjustment	Auto exposure lamp ON
Main scanning direction manual copy magnification ratio adjustment	Manual exposure lamp ON
Sub scanning direction copy magnification ratio adjustment	Photo exposure lamp ON

- 8) Set the adjustment mode to Manual with the copy mode select key.
- 9) Enter the new set value of main scanning direction copy magnification ratio with the copy quantity set key, and press the COPY button.
- 10) Change the set value and repeat the adjustment until the ratio is within the specified range.
When the set value is changed by 1, the magnification ratio is changed by 0.1%.

(3) Sub scanning direction copy magnification ratio

a. Note

Before performing this adjustment, the following adjustments must have been completed. If not, this adjustment cannot be performed properly.

- Image distortion adjustment
- Must be installed to the lens unit reference position.

b. Cases when the adjustment is required

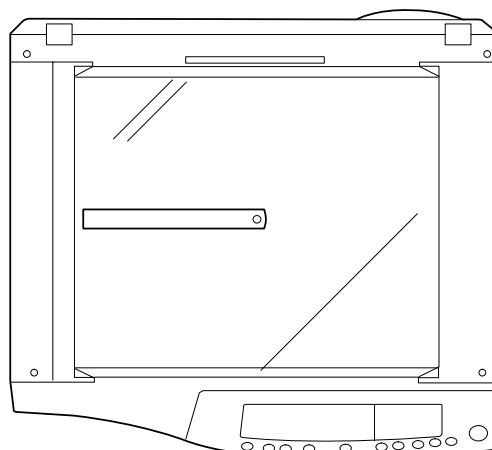
- 1) When the lens and the mirror unit are disassembled or the part is replaced.
- 2) When the scanner unit drive section is disassembled or the part is replaced.
- 3) When the main PWB is replaced.
- 4) When the EEPROM in the main PWB is replaced.
- 5) When "U2" trouble occurs.
- 6) When the copy image distortion adjustment is performed.

c. Necessary tools

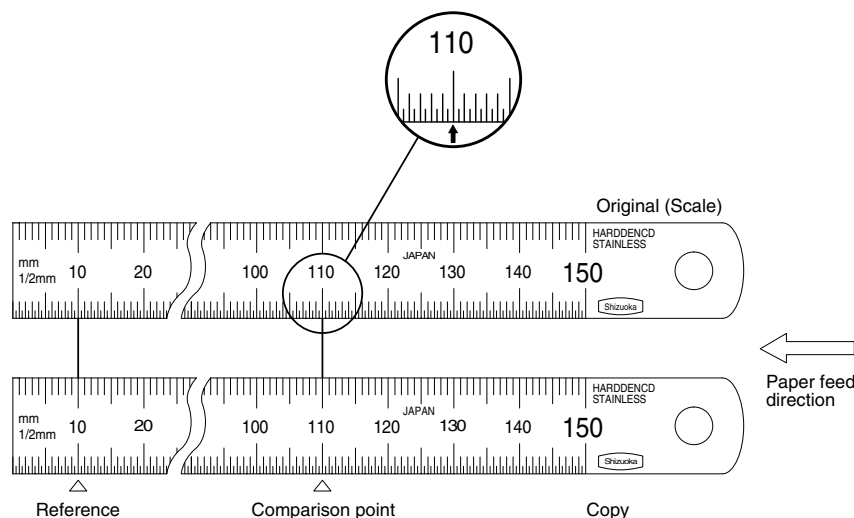
- Screwdriver (+)
- Scale

d. Adjustment procedure

- 1) Set the scale on the document table as shown below. (Use a long scale for precise adjustment.)



- 2) Set the copy magnification ratio to 100%.
- 3) Make a copy on A4 or $8\frac{1}{2}'' \times 11''$ paper.
- 4) Measure the length of the copied scale image.
- 5) Calculate the sub scanning direction copy magnification ratio.
Sub scanning direction copy magnification ratio
$$= \frac{\text{Copy image dimension}}{\text{Original dimension}} \times 100 (\%)$$



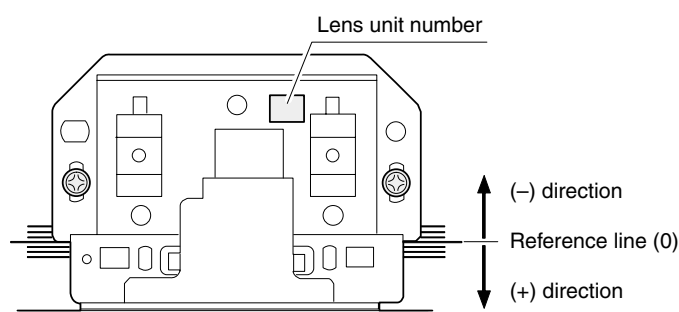
- 6) Check that the actual copy magnification ratio is within the specified range. ($100 \pm 1.0\%$).
If it is not within the specified range, perform the following procedures.
- 7) Execute SIM 48-1 to select the sub scanning direction copy magnification ratio adjustment mode.
To select the adjustment mode, use the copy mode select key. (Photo exposure lamp ON)
- 8) Enter the new set value of sub scanning direction copy magnification ratio with the copy quantity set key, and press the COPY button.

Repeat procedures 1) — 8) until the sub scanning direction actual copy magnification ratio in 100% copying is within the specified range.

When the set value is changed by 1, the magnification ratio is changed by 0.1%.

C. Lens unit attachment reference

Attach the lens unit so that the lens unit number on the lens adjustment plate is aligned with the scribe line on the base plate.



Example: Lens unit number -2.8

Attach the lens unit at 2 scales in the paper exit direction from the reference line.

Note: Never touch the other screws than the unit attachment screw.

The lens unit is supplied only in a whole unit.

D. Image position adjustment

There are following five kinds of image position adjustments, which are made by laser control except for the image scan start position adjustment. For the adjustments, SIM 50 – 01 and SIM 50 – 10 are used.

No.	Adjustment item	Simulation
1	Print start position	50 – 01
2	Image lead edge void amount	50 – 01
3	Image scan start position	50 – 01
4	Image rear edge void amount	50 – 01
5	Center offset	50 – 10

To select the adjustment mode with SIM 50 – 01, use the copy density select key.

The relationship between the adjustment modes and the lighting lamps are as shown in the table below.

Adjustment mode	Lighting lamp
Print start position	Auto (AE) lamp
Image lead edge void amount	Manual (TEXT) lamp
Image scan start position	Photo lamp
Image rear edge void amount	Auto, Manual, Photo lamps

To select the adjustment mode with SIM 50 – 10, use the copy mode select key.

The relationship between the adjustment modes and the lighting lamps are as shown in the table below.

Machine with the multi manual paper feed unit

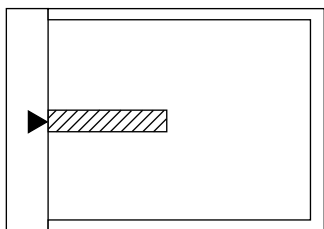
Adjustment mode	Lighting lamp
Print center offset (cassette)	Auto, Cassette
Print center offset (manual feed)	Auto, Manual
Document center offset	Auto, Manual

Machine with the single manual paper feed unit

Adjustment mode	Lighting lamp
Print center offset (cassette)	Auto, Cassette
Print center offset (manual feed)	Auto
Document center offset	Auto, Manual

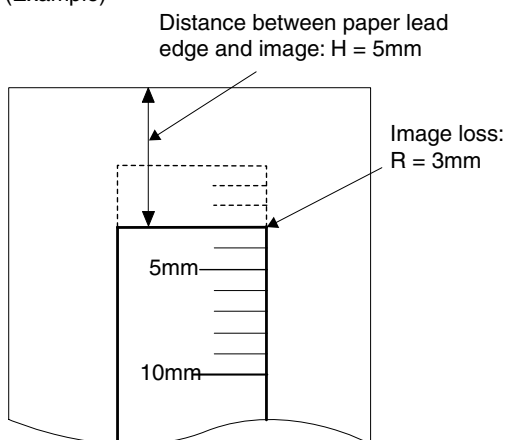
(1) Lead edge adjustment

- 1) Set a scale to the center of the paper lead edge guide as shown below, and cover it with B4 or 8 1/2" × 14" paper.



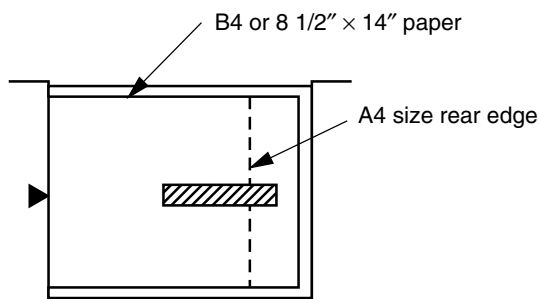
- 2) Execute SIM 50 - 01
- 3) Set the print start position (AE lamp ON) (A), the lead edge void amount (TEXT lamp ON) (B), and the scan start position (PHOTO lamp ON) (C) to 0, and make a copy of a scale at 100%.
- 4) Measure the image loss amount (R mm) of the scale image.
Set $C = 10 \times R$ (mm). (Example: Set the value of C to 30.)
When the value of C is increased by 10, the image loss is decreased by 1mm. (Default: 50)
- 5) Measure the distance (H mm) between the paper lead edge and the image print start position.
Set $A = 10 \times H$ (mm). (Example: Set the value of A to 50.)
When the value of A is increased by 10, the image lead edge is shifted to the paper lead edge by 1mm. (Default: 50)
- 6) Set the lead edge void amount to $B = 50$ (2.5mm).
When the value of B is increased by 10, the void amount is increased by about 1mm. For 25 or less, however, the void amount becomes zero. (Default: 50)

(Example)



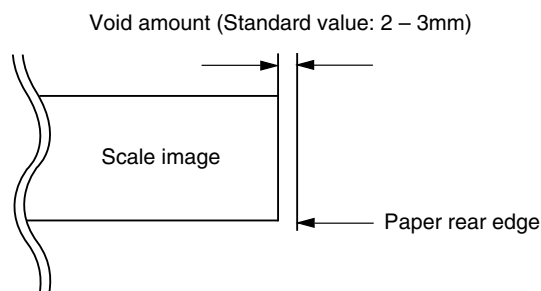
(2) Image rear edge void amount adjustment

- 1) Set a scale to the rear edge section of A4 or 11" × 8 1/2" paper size as shown in the figure below, and cover it with B4 or 8 1/2" × 14" paper.



- 2) Execute SIM 50 - 01 to select the image rear edge void amount adjustment mode.
The set adjustment value is displayed on the copy quantity display.

- 3) Make a copy and measure the void amount of image rear edge.

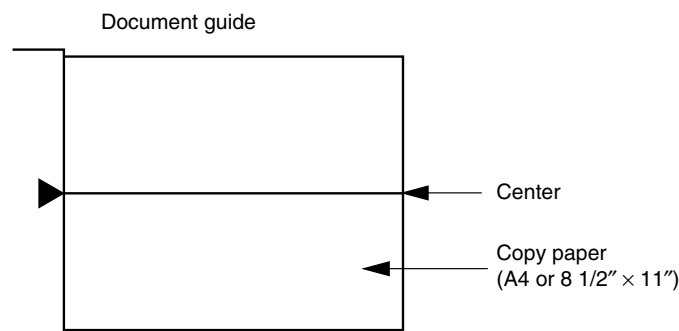


- 4) If the measurement value is out of the specified range, change the set value and repeat the adjustment procedure.
The default value is 50.

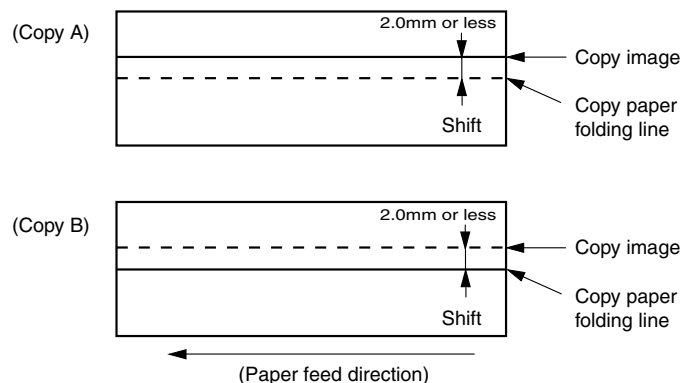
Note: The rear edge void cannot be checked with the first sheet after entering the simulation mode, the first sheet after turning off/on the power, or the first sheet after inserting the cassette. Use the second or later sheet to check the rear edge void.

(3) Center offset adjustment

- 1) Set the self-made test chart for the center position adjustment so that its center line is aligned with the center mark of the document guide.
 - Test chart for the center position adjustment
Draw a line at the center of A4 or 8 1/2" × 11" paper in the paper transport direction.



- 2) Execute SIM 50 - 10 to select the print center offset (cassette paper feed) adjustment mode.
The set adjustment value is displayed on the copy quantity display.
- 3) Make a copy and check that the copied center line is properly positioned.
The standard value is 0 ± 2 mm from the paper center.



- 4) If the measured value is out of the specified range, change the set value and repeat the adjustment procedure.
When the set value is increased by 1, the copy image is shifted by 0.1mm toward the rear frame.
- For the manual paper feed, change the manual paper feed adjustment mode and perform the similar procedures.
 - Since the document center offset is automatically adjusted by the CCD which scan the reference lines (F/R) on the back of document guide, there is no need to adjust manually.

2. Copy density adjustment

A. Copy density adjustment timing

The copy density adjustment must be performed in the following cases:

- When maintenance is performed.
- When the developing bias/grid bias voltage is adjusted.
- When the optical section is cleaned.
- When a part in the optical section is replaced.
- When the optical section is disassembled.
- When the OPC drum is replaced.
- When the main control PWB is replaced.
- When the EEPROM on the main control PWB is replaced.
- When the memory trouble (U2) occurs.

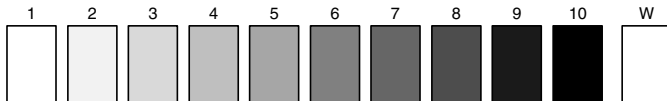
B. Note for copy density adjustment

1) Arrangement before execution of the copy density adjustment

- Clean the optical section.
- Clean or replace the charger wire.
- Check that the voltage at the high voltage section and the developing bias voltage are in the specified range.

C. Necessary tool for copy density adjustment

- One of the following test charts:
UKOG-0162FCZZ, UKOG-0089CSZZ, KODAK GRAY SCALE
- B4 (14" × 8 1/2") white paper
- The user program AE setting should be "3."



Test chart comparison table

UKOG-0162FCZZ DENSITY No.	1	2	3	4	5	6	7	8	9	10	W
UKOG-0089CSZZ DENSITY No.	0.1		0.2		0.3				0.5	1.9	0
KODAK GRAY SCALE		1		2		3		4		19	A

D. Features of copy density adjustment

For the copy density adjustment, the image data shift function provided in the image process LSI is used.

List of the adjustment modes

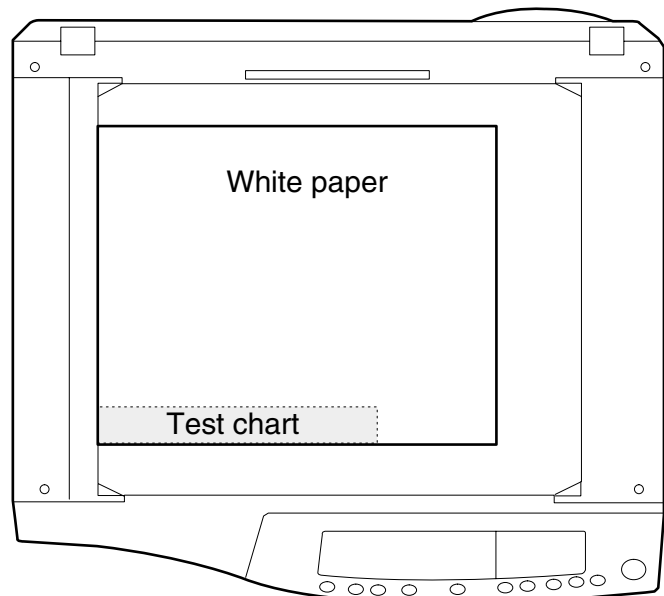
Auto Mode	Brightness 1 step only
Manual Mode	Brightness 5 steps. Adjustment of only the center brightness is made.
Photo Mode	Brightness 5 steps. Adjustment of only the center brightness is made.
Manual T/S mode	Brightness 5 steps. Adjustment of only the center brightness is made.
T/S Auto mode	Brightness 1 step only

E. Copy density adjustment procedure

Use SIM 46-01 to set the copy density for each copy mode.
For selection of modes, use the copy mode select key.

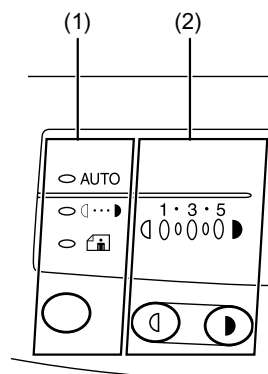
(1) Test chart (UKOG-0162FCZZ) setting

- Place the test chart so that its edge is aligned with the A4 (Letter) reference line on the document table. Then place a B4 (14" × 8 1/2") white paper on the test chart and close the document cover.



(2) Perform the adjustment in each mode.

- Execute SIM 46-1.
- Select the mode to be adjusted with the exposure mode select key. Set the exposure level to 3 for all adjustment. (Except for the auto mode.)

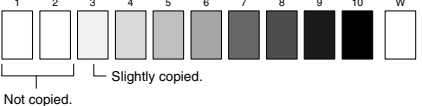


(1) Mode select key/display lamp

(2) Exposure level select key/display lamp

Adjustment mode	Exposure mode display lamp	Exposure level	Sharp gray chart adjustment level
Auto mode	Auto lamp ON	—	"3" is slightly copied.
Manual mode	Manual lamp ON	3	"3" is slightly copied.
Photo mode	Photo lamp ON	3	"3" is slightly copied.
Manual T/S mode	Manual lamp/Photo lamp ON	3	"4" is slightly copied.
Auto T/S mode	Auto lamp/Photo lamp ON	3	"4" is slightly copied.

- 3) Make a copy.
Check the adjustment level (shown in the above table) of the exposure test chart (Sharp Gray Scale).

Sharp Gray Scale adjustment level	
Non toner save mode	
Toner save mode	

(When too bright): Decrease the value displayed on the copy quantity display.

(When too dark): Increase the value displayed on the copy quantity display.

* The value can be set in the range of 1 — 99.

3. High voltage adjustment

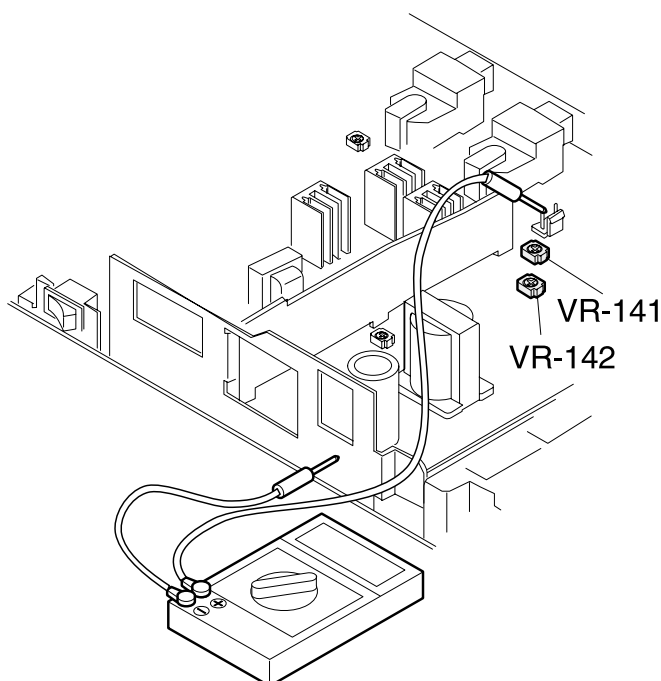
A. Main charger (Grid bias)

Note:

- Use a digital multi meter with internal resistance of 10M Ω or more measurement.
- After adjusting the grid LOW output, adjust the HIGH output. Do not reverse the sequence.

Procedures

1. Set the digital multi meter range to DC700V.
2. Set the positive side of the test rod to the connector CN11-3 (GRID) of high voltage section of the power PWB and set the negative side to the frame ground (radiating plate).
3. Execute SIM 8-3. (The main charger output is supplied for 30 sec in the grid voltage LOW output mode.)
4. Adjust the control volume (VR-141) so that the output voltage is $-400 \pm 20V$.
5. Execute SIM 8-2. (The main charger output is supplied for 30 sec in the grid voltage HIGH output mode.)
6. Adjust the control volume (VR-142) so that the output voltage is $580 \pm 10V$.



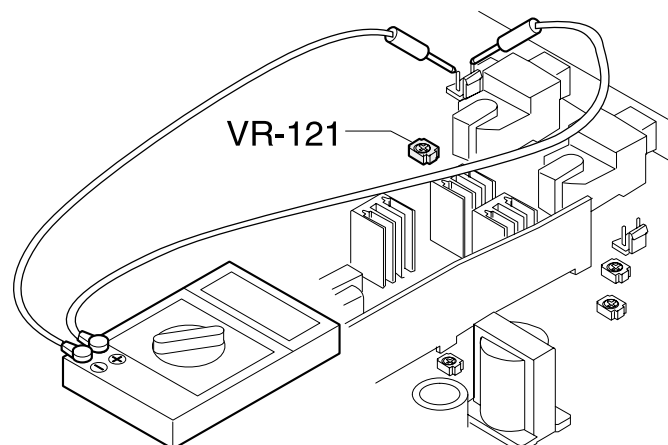
B. DV bias adjustment

Note:

- A digital multi meter with internal resistance of 1G Ω must be use for correct adjustment.

Procedures

1. Set the digital multi meter range to DC500V.
2. Set the positive side of the test rod to the connector CN-10-1 (DV BIAS) and set the negative side to the connector CN10-2 (FG).
3. Execute SIM 8-1. (The developing bias is outputted for 30 sec.)
4. Adjust the control volume (VR-121) so that the output voltage is $-400 \pm 5V$.



4. Duplex adjustment

A. Adjusting the paper reverse position in memory for duplex copying

This step adjusts the front surface printing (odd-number pages of a document set) in the S-D mode copying and the leading edge position of an image on even-number pages in the D-S mode.

That is, it covers the adjustment of the second surface printing mode (image loss at the front edge of an image) in which image data is once stored in memory.

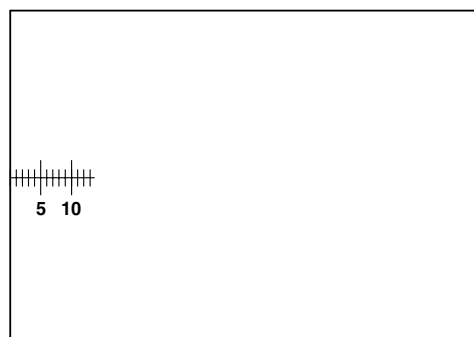
The image data is read, starting from its front end in the document delivery direction (Reference direction of document setting in the OC mode) and stored in memory.

This stored image data is printed starting at the printing start position, in the order of last-stored data to the first-stored data.

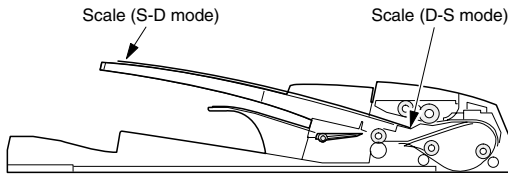
In other words, the front edge image loss of the image can be adjusted by changing the document read end position.

(Adjustment procedure)

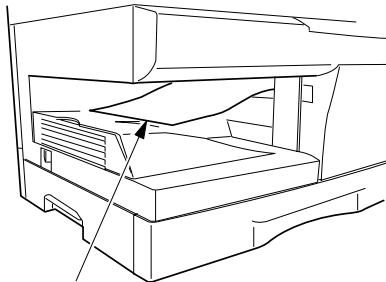
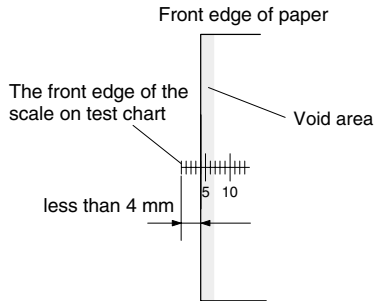
- 1) Preparing test chart (Draw a scale at the rear end of one side of a sheet of A4 white paper or letter paper)



- 2) Set the test chart so that the scale is positioned as shown below, in the S-D mode and the D-S mode.



- 3) Execute simulation 50-18 to make a copy and check the front edge image loss at the area where the scale is printed. Adjust the setting so that the front edge image loss is less than 4.0 mm in the R-SPF mode. An increase of 1 in setting represents an increase of 0.1 mm in image loss.



2nd printing surface where scale is printed (lower side)

B. Adjusting trailing edge void in duplex copying mode

This is the adjustment of the first surface printing mode (rear end void) in duplex copying.

In a duplex copying operation, the paper is delivered starting from the rear end of the first printing surface. It is therefore necessary to make a void area at the rear end on the first printing surface to prevent paper jam at the fusing part.

There are two adjustment modes:

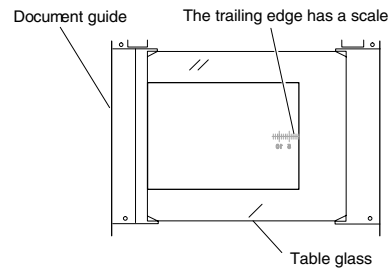
- 1) Image cut rear end void quantity (R-SPF) 50-19(AE)
The size (length) of a document read from the R-SPF is detected, the image at the trailing edge of the first printing surface is cut to make a void area. (The adjustment of void quantity at the time when the cassette paper size is not recognized.)
- 2) Paper trailing edge void quantity 50-19 (TEXT)
This adjustment is made when the cassette paper size is recognized. The trailing edge void quantity can be adjusted by changing the trailing edge image laser OFF timing.

The paper void quantity should be first adjusted before the image cut trailing edge void quantity (R-SPF) is adjusted.

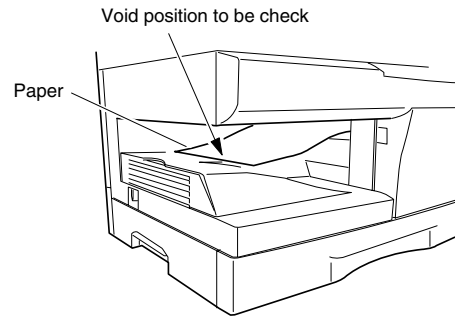
(Adjustment procedure)

(1) Paper trailing edge void quantity

- 1) Preparing test chart (Draw a scale at the rear end of one side of a sheet of A/4 white paper or letter paper)
- 2) Set the test chart on the document glass as shown below.



- 3) Using the user simulation [18], set the paper size of the first cassette.
Letter paper: 4
A4 paper: 3
- 4) Execute simulation 50-19 to turn on the TEXT lamp and make the printing mode in OC-D mode. Make a copy of the test chart to check the void area of the scale on the image.



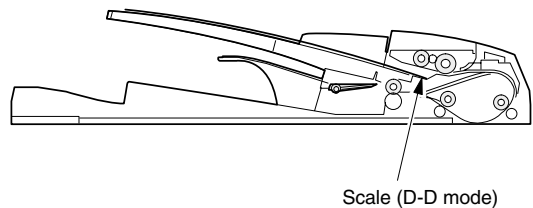
The trailing edge void on the first printing surface is shown above.

Adjust the setting so that the void area is 4 - 5 mm.

An increase in 1 of setting represents 0.1 mm in void area.

(2) Image cut trailing edge void quantity (R-SPF)

- 1) Set the test chart so that the scale is positioned as shown below.



- 2) Execute simulation 50-19 to turn on the AE lamp and make the printing mode in the D-D mode.
- 3) Remove and reinsert the cassette.
NOTE: Make sure to carry out this step before making a copy during this adjustment.
- 4) Make a copy and check the void area of the scale on the image. Adjust the setting so that the void area is 2 - 4 mm. An increase of 1 in setting represents an increase of 0.1 mm in void area.
I Void position to be checked

[9] SIMULATION TROUBLE CODES

1. List of simulations

The simulations for the AR-F151 (with Fax functions) are shown in bold fonts.

Sim No.	Kind of main code	Sub code	Operation
01	Optical system	01	Mirror scan operation
02	SPF Individual load operation	02 03 04 05 06 07	SPF sensor status display Motor ON Paper feed solenoid ON Pressure release solenoid ON (RSPF) Resist clutch ON (RSPF) Gate solenoid ON (RSPF)
05	Lamp ON check	01 02 03	Operation panel display check Fusing lamp ON + Cooling fan HIGH/LOW speed Copy lamp ON
06	Machine individual load operation	01 02	Paper feed solenoid ON Resist solenoid ON
07	Aging	01 06	Warm up display and aging with jam Intermittent aging
08	High voltage output check	01 02 03 06	Developing bias Main charger (Grid high) Grid voltage (Low) Transfer charger
10	Other	None	Toner motor aging
14	Trouble reset	None	Cancel troubles other than U2
16	U2 trouble reset	None	Cancel of U2 trouble
20	Maintenance counter clear	01	Maintenance counter clear
21	Counter setup (When maintenance)	01	Maintenance cycle setup
22	Counter display	01 02 04 05 06 08 12 14 17 18 21 22	Maintenance counter display Maintenance preset value display Jam total counter display Total counter display DV counter display SPF counter display Drum counter display P-ROM version display Copy counter display Printer counter display Scanner counter display SPF jam total counter display
24	Special counter clear	01 04 07 08 09 13 14	Jam total counter clear SPF counter clear Drum counter clear Copy counter clear Printer counter clear Scanner counter clear SPF jam total counter clear
25	Main motor ON	01 10	Main motor system ON + Cooling fan low speed (For the duplex model, the duplex motor is simultaneously turned on.) Polygon motor ON

Sim No.	Kind of main code	Sub code	Operation
26	Various setup	01 02 03 04 06 07 20 30 38 39 40 42 43 44	Manual feed setup SPF setup Second cassette setup Machine duplex setup Destination setup Machine conditions check Rear edge void setup CE mark conformity control ON/OFF setup Cancel of stop at drum life over Memory capacity setup Polygon motor OFF time setup Transfer ON timing control setup Side void setup SPF document rear edge read setup (SC only)
30	Sensor operation check (Standard provision)	01	Paper sensor status display
43	Fusing temperature setup	01 04 05 09	Normal copy Fusing temperature setup 2 Duplex mode fusing temperature setup Postcard size paper fusing control setup
46	Exposure adjustment	01	Copy density adjustment
48	Magnification ratio correction	01	Front/rear scan direction
50	Lead edge adjustment	01 10 18 19	Lead edge image position adjustment Paper lead edge/rear edge void adjustment Paper center offset + OC/Document center offset + SPF document center offset Memory reverse position adjustment Duplex copy rear edge void adjustment
51	Timing adjustment	02 06	Resist quantity adjustment SPF exposure correction
61	Laser system operation	03	Polygon motor check (HSYNC output check)
63	Shading	01	Shading check
64	Self print	01	Self print only with the engine (1 by 2 mode)
67		14	Program download to PCL PWB

2. Contents of simulations (new or revised simulations only)

Input method: Clear key → Exposure Select key → Clear key → Exposure Select key

Main code	Sub code	Content												
01	01	Mirror scan operation (Operation/Procedure) 1. When this simulation is executed, the mirror home position is detected. <table><tr><td>Sensor name</td><td>Display lamp</td></tr><tr><td>Mirror home position sensor</td><td>OPC drum cartridge replacement lamp</td></tr></table> 2. When the _START key is pressed, scanning is executed at the speed corresponding to the currently set copy magnification ratio. The copy magnification ratio can be arbitrarily set with the magnification ratio select key/zoom key.	Sensor name	Display lamp	Mirror home position sensor	OPC drum cartridge replacement lamp								
		Sensor name	Display lamp											
Mirror home position sensor	OPC drum cartridge replacement lamp													
02	02	SPF sensor status display ON/OFF of the sensors in the SPF can be checked with the following lamps. <table><tr><td>Display</td><td>Sensor</td></tr><tr><td>Developer cartridge replacement lamp</td><td>Document set detection (SPID)</td></tr><tr><td>Jam lamp</td><td>SPF document transport detection (SPPD)</td></tr><tr><td>Photoconductor cartridge replacement lamp</td><td>SPF cover open detection (SCOD)</td></tr><tr><td>SPF jam lamp</td><td>SPF open/close detection (SDSW) FAX document size detection Paper size detection</td></tr><tr><td>SPF lamp</td><td>FAX/SPF B4 size detection (SB4D)</td></tr></table>	Display	Sensor	Developer cartridge replacement lamp	Document set detection (SPID)	Jam lamp	SPF document transport detection (SPPD)	Photoconductor cartridge replacement lamp	SPF cover open detection (SCOD)	SPF jam lamp	SPF open/close detection (SDSW) FAX document size detection Paper size detection	SPF lamp	FAX/SPF B4 size detection (SB4D)
		Display	Sensor											
		Developer cartridge replacement lamp	Document set detection (SPID)											
		Jam lamp	SPF document transport detection (SPPD)											
		Photoconductor cartridge replacement lamp	SPF cover open detection (SCOD)											
		SPF jam lamp	SPF open/close detection (SDSW) FAX document size detection Paper size detection											
		SPF lamp	FAX/SPF B4 size detection (SB4D)											
03	Motor ON (Operation/Procedure) When the start key is pressed, the SPF motor rotates for 10 sec at the speed corresponding to the currently set magnification ratio.													
04	Paper feed solenoid ON (Operation/Procedure) When the start key is pressed, the SPF paper feed solenoid repeats ON (500 ms) and OFF (500 ms) 20 times.													
05	Pressure release solenoid ON (RSPF) (Operation/Procedure) When the start key is pressed, the RSPF document transport solenoid (SPFS) repeats ON (500 ms) and OFF (500 ms) 20 times.													
06	Resist clutch ON (RSPF) (Operation/Procedure) When the start key is pressed, the RSPF resist clutch (SRRC) repeats ON (500 ms) and OFF (500 ms) 20 times.													
07	Gate solenoid ON (RSPF) (Operation/Procedure) When the start key is pressed, the RSPF gate solenoid (SGS) repeats ON (500 ms) and OFF (500 ms) 20 times.													
05	01	Operation panel display check When the PRINT switch is pressed, the LED on the operation panel is lighted for 5 sec. The LED on the FAX panel and the LCD balck background are displayed simultaneously.												
	02	Fusing lamp ON + cooling fan HIGH/LOW speed (Operation/Procedure) When the START key is pressed, the fusing lamp repeats ON (500ms) and OFF (500msec) 5 times. During this period, the cooling fan rotates in the high speed mode. After completion of the operation, the cooling fan rotates in the low speed mode.												
	03	Copy lamp ON (Operation/Procedure) When the START key is pressed, the copy lamp is lighted for 5 sec.												
06	01	Paper feed solenoid ON (Operation/Procedure) When the START key is pressed, the paper feed solenoid selected by the tray select key repeats ON (500ms) and OFF (500ms) 20 times.												
	02	Resist solenoid ON (Operation/Procedure) When the START key is pressed, the resist solenoid (RRS) repeats ON (500ms) and OFF (500ms) 20 times.												

Main code	Sub code	Content														
07	01	Warm-up display and aging with jam (Operation/Procedure) 1. When the simulation is executed, warming up is started. 2. Warm-up time is counted and displayed every second on the copy quantity display. 3. After completion of warm-up, the time count is stopped and the ready lamp is lighted. 4. Press the clear key to clear the warm-up time display, set the copy quantity, and press the START key, and the machine will copy the set quantity repeatedly.														
	06	Intermittent aging (Operation/Procedure) 1. When the simulation is executed, warming up is started. 2. After completion of warm-up, the ready lamp is lighted. 3. Set the copy quantity and press the START key, and the machine will copy the set quantity repeatedly. 4. After 3 sec of the interval time from completion of copying the set quantity, the machine will resume copying. 5. The above operation 4 is repeated.														
08	01	Developing bias (Operation/Procedure) When the START key is pressed, the developing bias is outputted for 30 sec.														
	02	Main charger (Grid high) (Operation/Procedure) When the START key is pressed, the main charger output is supplied for 30 sec in the grid voltage HIGH mode.														
	03	Grid voltage (Low) (Operation/Procedure) When the START key is pressed, the main charger output is supplied for 30 sec in the grid voltage LOW mode.														
	06	Transfer charger (Operation/Procedure) When the START key is pressed, the transfer charger output is supplied for 30 sec.														
10	None	Toner motor aging (Operation/Procedure) When the START key is pressed, the toner motor output is supplied for 30 sec.														
14	None	Cancel of troubles other than U2 (Operation/Procedure) After canceling the trouble, the simulation is also automatically canceled.														
16	None	Cancel of U2 trouble (Operation/Procedure) 1. When the START key is pressed, the EEPROM total counter check sum is rewritten and the trouble is canceled. 2. After canceling the trouble, the simulation is also automatically canceled.														
20	01	Maintenance counter clear When the PRINT switch is pressed, the maintenance counter value is cleared and the value of 000000 is displayed.														
21	01	Maintenance cycle setup The currently set maintenance cycle code is displayed (initial display), and the set data is stored. <table border="1"><thead><tr><th>Code</th><th>Setup</th></tr></thead><tbody><tr><td>0</td><td>3,000 sheets</td></tr><tr><td>1</td><td>6,000 sheets</td></tr><tr><td>2</td><td>9,000 sheets</td></tr><tr><td>3</td><td>13,000 sheets</td></tr><tr><td>4</td><td>18,000 sheets</td></tr><tr><td>5</td><td>Free (999,999 sheets) * Default</td></tr></tbody></table>	Code	Setup	0	3,000 sheets	1	6,000 sheets	2	9,000 sheets	3	13,000 sheets	4	18,000 sheets	5	Free (999,999 sheets) * Default
Code	Setup															
0	3,000 sheets															
1	6,000 sheets															
2	9,000 sheets															
3	13,000 sheets															
4	18,000 sheets															
5	Free (999,999 sheets) * Default															
22	01	Maintenance counter display The display method is the same as the total count value display.														
	02	Maintenance preset value display The value corresponding to the code set with SIM 21-01 is displayed. The display method is the same as the total count value display.														
	04	Jam total counter display The display method is the same as the total count value display.														
	05	Total counter display The total count value is displayed in 3 digits × 2 times repeatedly. <Display example: 12345> 012 → Blank → 345 → Blank → 012 0.7s 0.3s 0.7s 1.0s 0.7s														

Main code	Sub code	Content						
22	06	DV counter display The display method is the same as the total count value display.						
	08	SPF counter display The display method is the same as the total count value display.						
	12	Drum counter display The display method is the same as the total count value display.						
	14	P-ROM versiondisplay The P-ROM version is displayed in 3 digits on the value display section. (AR, DM, PCL models: 100% Zoom lamp display)						
	17	Copy counter display The display method is the same as the total count value display.						
	18	Printer counter display The display method is the same as the total count value display.						
	21	Scanner counter display The display method is the same as the total count value display.						
	22	SPF jam total counter display The display method is the same as the total count value display.						
24	01	Jam total counter clear When the PRINT switch is pressed, the jam total count value is reset to 0.						
	04	SPF counter clear When the PRINT switch is pressed, the SPF count value is reset to 0.						
	07	Drum counter clear When the PRINT switch is pressed, the drum count value is reset to 0.						
	08	Copy counter clear When the PRINT switch is pressed, the copy count value is reset to 0.						
	09	Printer counter clear When the PRINT switch is pressed, the printer count value is reset to 0.						
	13	Scanner counter clear When the PRINT switch is pressed, the scanner count value is reset to 0.						
	14	SPF jam total counter clear When the PRINT switch is pressed, the SPF jam total count value is reset to 0.						
25	01	Main motor system ON + Cooling fan low speed (For the duplex model, the duplex motor is simultaneously turned on.) (Operation/Procedure) When the START key is pressed, the main motor is rotated for 30 sec. To save toner consumption, the different operations are executed depending on installation of the developing unit. · When the developing unit is installed, the developing bias, the main charger, and the grid are also outputted. · When the developing unit is not installed, only the motor is rotated. * Do not turn on the door open/close switch forcibly to execute this simulation.						
	10	Polygon motor ON (Operation/Procedure) When the START key is pressed, the polygon motor is operated for 30sec.						
26	01	Manual feed setup (Operation/Procedure) 1. When this simulation is executed, the currently set bypass code number is displayed. 2. Enter the code number corresponding to the bypass and press the START key, and the setting will be changed. <table border="1"><tr><td>Code number</td><td>Bypass</td></tr><tr><td>0</td><td>Single bypass</td></tr><tr><td>1</td><td>Multi bypass</td></tr></table>	Code number	Bypass	0	Single bypass	1	Multi bypass
Code number	Bypass							
0	Single bypass							
1	Multi bypass							

Main code	Sub code	Content								
26	02	SPF setup When this simulation is executed, the currently set SPF code number is displayed. Enter the code number of the SPF to be set and press the PRINT switch. The setup is changed. <table><tr><th>Code No.</th><th>SPF</th></tr><tr><td>0</td><td>Without SPF</td></tr><tr><td>1</td><td>With SPF (Setup is required when installing FAX.)</td></tr><tr><td>2</td><td>With RSPF</td></tr></table>	Code No.	SPF	0	Without SPF	1	With SPF (Setup is required when installing FAX.)	2	With RSPF
	Code No.	SPF								
	0	Without SPF								
	1	With SPF (Setup is required when installing FAX.)								
	2	With RSPF								
03	Second cassette setup (Operation/Procedure) 1. When this simulation is executed, the currently set code number of the second cassette is displayed. 2. Enter the code number and press the start key. The setting is changed. <table><tr><th>Code number</th><th>Second cassette</th></tr><tr><td>0</td><td>Without second cassette</td></tr><tr><td>1</td><td>With second cassette</td></tr></table>	Code number	Second cassette	0	Without second cassette	1	With second cassette			
Code number	Second cassette									
0	Without second cassette									
1	With second cassette									
04	Machine duplex setup (Operation/procedure) 1. When this simulation is executed, the currently set duplex code number is displayed. 2. Enter the code number corresponding to the duplex and press the ENTER key, and the setup will be changed. <table><tr><th>Code number</th><th>Duplex</th></tr><tr><td>0</td><td>Without Duplex</td></tr><tr><td>1</td><td>With Duplex</td></tr></table>	Code number	Duplex	0	Without Duplex	1	With Duplex			
Code number	Duplex									
0	Without Duplex									
1	With Duplex									
06	Destination setup (Operation/Procedure) 1. When this simulation is executed, the currently set destination code number is displayed. 2. Enter the code number corresponding to the destination and press the START key, and the setting will be changed. <table><tr><th>Code number</th><th>Destination</th></tr><tr><td>0</td><td>Inch series</td></tr><tr><td>1</td><td>EX AB series</td></tr><tr><td>2</td><td>Japan AB series</td></tr></table>	Code number	Destination	0	Inch series	1	EX AB series	2	Japan AB series	
Code number	Destination									
0	Inch series									
1	EX AB series									
2	Japan AB series									
07	Machine conditions check (Operation/Procedure) When this simulation is executed, the current machine setting is displayed. <table><tr><th>CPM</th><th>Copy quantity display</th></tr><tr><td>10 cpm</td><td>10</td></tr><tr><td>12 cpm</td><td>12</td></tr><tr><td>15 cpm</td><td>15</td></tr></table> (The machine type is shown with the lamp display. AL series: None AR-A series: AE mode lamp ON AR-B series: TEXT mode lamp ON DM series: Photo mode lamp ON)	CPM	Copy quantity display	10 cpm	10	12 cpm	12	15 cpm	15	
CPM	Copy quantity display									
10 cpm	10									
12 cpm	12									
15 cpm	15									
20	Rear edge void setup (Operation/Procedure) 1. When this simulation is executed, the currently set code number of rear edge void setting is displayed. 2. Enter the code number of rear edge void setting and press the START key, and the setting will be changed. <table><tr><th>Code number</th><th>Rear edge void setting</th></tr><tr><td>0</td><td>Rear edge void allowed</td></tr><tr><td>1</td><td>Rear edge void not allowed</td></tr></table>	Code number	Rear edge void setting	0	Rear edge void allowed	1	Rear edge void not allowed			
Code number	Rear edge void setting									
0	Rear edge void allowed									
1	Rear edge void not allowed									
30	CE mark conformity control ON/OFF setup (Operation/Procedure) 1. When this simulation is executed, the currently set code number of CE mark application is displayed. 2. Enter the code number of CE mark application and press the START key, and the setting will be changed. <table><tr><th>Code number</th><th>CE mark application setting</th></tr><tr><td>0</td><td>CE mark application control OFF</td></tr><tr><td>1</td><td>CE mark application control ON</td></tr></table>	Code number	CE mark application setting	0	CE mark application control OFF	1	CE mark application control ON			
Code number	CE mark application setting									
0	CE mark application control OFF									
1	CE mark application control ON									

Main code	Sub code	Content																					
26	38	Cancel of stop at drum life over (Operation/Procedure) 1. When this simulation is executed, the currently set code number is displayed. 2. Enter the code number and press the START key, and the setting will be changed. <table><tr><th>Code number</th><th>Setting</th></tr><tr><td>0</td><td>Stop at drum life over</td></tr><tr><td>1</td><td>Stop cancel at drum life over</td></tr></table>	Code number	Setting	0	Stop at drum life over	1	Stop cancel at drum life over															
	Code number	Setting																					
	0	Stop at drum life over																					
	1	Stop cancel at drum life over																					
39	Memory capacity setup (Operation/Procedure) 1. When this simulation is executed, the currently set code number is displayed. 2. Enter the code number and press the START key, and the setting will be changed. <table><tr><th>Code number</th><th>Setting</th></tr><tr><td>0</td><td>No memory</td></tr><tr><td>1</td><td>4 Mbyte</td></tr><tr><td>2</td><td>6 Mbyte</td></tr></table>	Code number	Setting	0	No memory	1	4 Mbyte	2	6 Mbyte														
Code number	Setting																						
0	No memory																						
1	4 Mbyte																						
2	6 Mbyte																						
40	Polygon motor OFF time setup (Operation/Procedure) 1. When this simulation is executed, the currently set code number is displayed. 2. Enter the code number and press the START key, and the setting will be changed. <table><tr><th>Code number</th><th>Setting</th></tr><tr><td>0</td><td>0 sec</td></tr><tr><td>1</td><td>30 sec</td></tr><tr><td>2</td><td>60 sec</td></tr><tr><td>3</td><td>90 sec</td></tr></table>	Code number	Setting	0	0 sec	1	30 sec	2	60 sec	3	90 sec												
Code number	Setting																						
0	0 sec																						
1	30 sec																						
2	60 sec																						
3	90 sec																						
42	Transfer ON timing control setup (Operation / Procedure) 1. When this simulation is executed, the currently set code number is displayed. 2. Enter the code number and press the START key, and the setting will be changed. (For any number different from the following ones, the default time is automatically set.) <table><tr><th>Code number</th><th>Setting</th></tr><tr><td>0</td><td>Default (330 msec)</td></tr><tr><td>1</td><td>−40 msec</td></tr><tr><td>2</td><td>−30 msec</td></tr><tr><td>3</td><td>−20 msec</td></tr><tr><td>4</td><td>−10 msec</td></tr><tr><td>5</td><td>Default (330 msec)</td></tr><tr><td>6</td><td>+10 msec</td></tr><tr><td>7</td><td>+20 msec</td></tr><tr><td>8</td><td>+30 msec</td></tr><tr><td>9</td><td>+40 msec</td></tr></table>	Code number	Setting	0	Default (330 msec)	1	−40 msec	2	−30 msec	3	−20 msec	4	−10 msec	5	Default (330 msec)	6	+10 msec	7	+20 msec	8	+30 msec	9	+40 msec
Code number	Setting																						
0	Default (330 msec)																						
1	−40 msec																						
2	−30 msec																						
3	−20 msec																						
4	−10 msec																						
5	Default (330 msec)																						
6	+10 msec																						
7	+20 msec																						
8	+30 msec																						
9	+40 msec																						

Main code	Sub code	Content																								
26	43	Side void setup (Operation/Procedure) 1. When this simulation is executed, the currently set code number of the side void amount is displayed. 2. Enter the code number and press the start key. The setting is changed. <table><tr><th>Code number</th><th>Setting</th></tr><tr><td>0</td><td>0 mm</td></tr><tr><td>1</td><td>0.5 mm</td></tr><tr><td>2</td><td>1.0 mm</td></tr><tr><td>3</td><td>1.5 mm</td></tr><tr><td>4</td><td>2.0 mm *Default</td></tr><tr><td>5</td><td>2.5 mm</td></tr><tr><td>6</td><td>3.0 mm</td></tr><tr><td>7</td><td>3.5 mm</td></tr><tr><td>8</td><td>4.0 mm</td></tr><tr><td>9</td><td>4.5 mm</td></tr><tr><td>10</td><td>5.0 mm</td></tr></table>	Code number	Setting	0	0 mm	1	0.5 mm	2	1.0 mm	3	1.5 mm	4	2.0 mm *Default	5	2.5 mm	6	3.0 mm	7	3.5 mm	8	4.0 mm	9	4.5 mm	10	5.0 mm
	Code number	Setting																								
0	0 mm																									
1	0.5 mm																									
2	1.0 mm																									
3	1.5 mm																									
4	2.0 mm *Default																									
5	2.5 mm																									
6	3.0 mm																									
7	3.5 mm																									
8	4.0 mm																									
9	4.5 mm																									
10	5.0 mm																									
	44	SPF document rear edge read setup + Fax document rear edge scan setup. When this simulation is executed, the currently set code number is displayed. Enter the desired code number and press the START key, and the display will be changed. The document rear edge scanning area in SPF reduction (less than 100%) copy is changed. The code number is changeable in the range of 0 – 8. The default value is 4, and 2 mm of the document rear edge is cut. When the value is changed by 1, the area is changed by 1 mm.																								
30	01	Paper sensor status display The paper sensor status is displayed with the lamps on the operation panel. <table><tr><th>Display</th><th>Sensor</th></tr><tr><td>Developer cartridge replacement lamp</td><td>Paper detection before resist (PPD1)</td></tr><tr><td>JAM lamp</td><td>Fusing section paper detection (PPD2)</td></tr><tr><td>Photoconductor cartridge replacement lamp</td><td>Paper exit paper detection (POD)</td></tr><tr><td>2nd cassette lamp</td><td>2nd CS paper detection (PPD3)</td></tr><tr><td>Zoom lamp</td><td>New drum cartridge detection (PUIS)</td></tr><tr><td>AE lamp</td><td>Single manual feed paper detection (MFD)</td></tr><tr><td>Exposure level 1 (Light) lamp</td><td>Main cassette A4 width detection (PSW1)</td></tr><tr><td>Exposure level 5 (Dark) lamp</td><td>2nd cassette A4 width detection (PSW2)</td></tr></table>	Display	Sensor	Developer cartridge replacement lamp	Paper detection before resist (PPD1)	JAM lamp	Fusing section paper detection (PPD2)	Photoconductor cartridge replacement lamp	Paper exit paper detection (POD)	2nd cassette lamp	2nd CS paper detection (PPD3)	Zoom lamp	New drum cartridge detection (PUIS)	AE lamp	Single manual feed paper detection (MFD)	Exposure level 1 (Light) lamp	Main cassette A4 width detection (PSW1)	Exposure level 5 (Dark) lamp	2nd cassette A4 width detection (PSW2)						
Display	Sensor																									
Developer cartridge replacement lamp	Paper detection before resist (PPD1)																									
JAM lamp	Fusing section paper detection (PPD2)																									
Photoconductor cartridge replacement lamp	Paper exit paper detection (POD)																									
2nd cassette lamp	2nd CS paper detection (PPD3)																									
Zoom lamp	New drum cartridge detection (PUIS)																									
AE lamp	Single manual feed paper detection (MFD)																									
Exposure level 1 (Light) lamp	Main cassette A4 width detection (PSW1)																									
Exposure level 5 (Dark) lamp	2nd cassette A4 width detection (PSW2)																									
43	01	Fusing temperature setup (Normal copy) (Operation/Procedure) 1. When this simulation is executed, the currently set code number is displayed. 2. Enter the code number and press the START key, and the setting will be changed. <table><tr><th>Code number</th><th>Set temperature (°C)</th></tr><tr><td>0</td><td>175</td></tr><tr><td>1</td><td>180</td></tr><tr><td>2</td><td>185</td></tr><tr><td>3</td><td>190</td></tr><tr><td>4</td><td>195 (* Default)</td></tr><tr><td>5</td><td>200</td></tr></table>	Code number	Set temperature (°C)	0	175	1	180	2	185	3	190	4	195 (* Default)	5	200										
Code number	Set temperature (°C)																									
0	175																									
1	180																									
2	185																									
3	190																									
4	195 (* Default)																									
5	200																									

Main code	Sub code	Content																						
43	04	Fusing temperature setup 2 (Operation/Procedure) 1. When this simulation is executed, the currently set code number is displayed. 2. Enter the code number and press the START key, and the setting will be changed. <table><tr><th>Code number</th><th>Set temperature (°C)</th></tr><tr><td>0</td><td>155</td></tr><tr><td>1</td><td>160</td></tr><tr><td>2</td><td>165</td></tr><tr><td>3</td><td>170 (* Default)</td></tr><tr><td>4</td><td>175</td></tr><tr><td>5</td><td>180</td></tr></table>	Code number	Set temperature (°C)	0	155	1	160	2	165	3	170 (* Default)	4	175	5	180								
	Code number	Set temperature (°C)																						
	0	155																						
1	160																							
2	165																							
3	170 (* Default)																							
4	175																							
5	180																							
	05	Duplex mode fusing temperature setup (Operation/Procedure) 1. When this simulation is executed, the currently set code number is displayed. 2. Enter the code number corresponding to the duplex and press the START key. The setting is changed accordingly. <table><tr><th>Code number</th><th>Shift temperature (°C)</th></tr><tr><td>0</td><td>±0°C</td></tr><tr><td>1</td><td>−8°C</td></tr><tr><td>2</td><td>−6°C</td></tr><tr><td>3</td><td>−4°C</td></tr><tr><td>4</td><td>−2°C</td></tr><tr><td>5</td><td>±0°C</td></tr><tr><td>6</td><td>+2°C</td></tr><tr><td>7</td><td>+4°C</td></tr><tr><td>8</td><td>+6°C</td></tr><tr><td>9</td><td>+8°C</td></tr></table> * The above shift temperature set by this simulation is added to the fusing temperature of single copy.	Code number	Shift temperature (°C)	0	±0°C	1	−8°C	2	−6°C	3	−4°C	4	−2°C	5	±0°C	6	+2°C	7	+4°C	8	+6°C	9	+8°C
Code number	Shift temperature (°C)																							
0	±0°C																							
1	−8°C																							
2	−6°C																							
3	−4°C																							
4	−2°C																							
5	±0°C																							
6	+2°C																							
7	+4°C																							
8	+6°C																							
9	+8°C																							
	09	Postcard size paper fusing control setup <table><tr><th>Code number</th><th>Setup</th></tr><tr><td>0</td><td>Cancel (Default)</td></tr><tr><td>1</td><td>Setup</td></tr></table>	Code number	Setup	0	Cancel (Default)	1	Setup																
Code number	Setup																							
0	Cancel (Default)																							
1	Setup																							
46	01	Copy density adjustment (Outline) Used to adjust the copy density in each copy mode.(The copy density can be set by changing the set value of ASIC GAMMA ADJUST register.) Setting in each copy mode is performed at exposure level 3. When the copy density (exposure) is adjusted arbitrarily, the max, and min. exposure levels are automatically calculated and set. (The change amounts (gradient, change amount) at level 1 – 5 are predetermined.) (Operation/Procedure) 1. When this simulation is executed, warming up and shading are performed and the current set value is displayed in two digits. 2. Press the copy mode select key to select each setting mode and setting display. * The copy mode setting is indicated with the following lamps as shown below. 3. Change the setting with the value up-down key and press the START key, and a copy will be made with the entered set value. 4. Press the clear key to store the set value and exit the simulation. <table><tr><th>Copy mode</th><th>Display lamp</th></tr><tr><td>AE mode</td><td>AE mode lamp</td></tr><tr><td>TEXT mode</td><td>TEXT mode lamp</td></tr><tr><td>PHOTO mode</td><td>PHOTO mode lamp</td></tr><tr><td>TS mode (TEXT)</td><td>TEXT mode lamp & PHOTO mode lamp</td></tr><tr><td>TS mode (AE)</td><td>AE mode lamp & PHOTO mode lamp</td></tr></table>	Copy mode	Display lamp	AE mode	AE mode lamp	TEXT mode	TEXT mode lamp	PHOTO mode	PHOTO mode lamp	TS mode (TEXT)	TEXT mode lamp & PHOTO mode lamp	TS mode (AE)	AE mode lamp & PHOTO mode lamp										
Copy mode	Display lamp																							
AE mode	AE mode lamp																							
TEXT mode	TEXT mode lamp																							
PHOTO mode	PHOTO mode lamp																							
TS mode (TEXT)	TEXT mode lamp & PHOTO mode lamp																							
TS mode (AE)	AE mode lamp & PHOTO mode lamp																							

Main code	Sub code	Content																														
46	01	Relationship between the displayed values and the GAMMA ADJUST register <table><tr><td></td><td>Exp1</td><td>Exp2</td><td>Exp3</td><td>Exp4</td><td>Exp5</td></tr><tr><td>AE</td><td>-24</td><td>-12</td><td>0</td><td>+12</td><td>+24</td></tr><tr><td>TEXT</td><td>-24</td><td>-12</td><td>0</td><td>+12</td><td>+24</td></tr><tr><td>PHOTO</td><td>-24</td><td>-12</td><td>0</td><td>+12</td><td>+24</td></tr><tr><td>T/S</td><td>-24</td><td>-12</td><td>0</td><td>+12</td><td>+24</td></tr></table> The value displayed after execution of this simulation can be set in the range of 0 – 99 with 50 as the center value. When the text mode set value is Gat3, for example, the GAMMA ADJUST register value set at Exp1 is: Text Exp1 = Gat3 – 50 – 24 When 40 is set to Gat3, Text Exp1 = 40 – 50 – 24 = -34 Then set the GAMMA ADJUST register set value to -34. Perform the same procedure for each mode and each Exp. * The above table may subject to change. * For the gradient, there is a similar table, though not specified here. The value set with SIM 46, however, is not reflected. * The AE mode Exp selection is not specified, but corresponds to the grades for AE exposure selection in the former models.		Exp1	Exp2	Exp3	Exp4	Exp5	AE	-24	-12	0	+12	+24	TEXT	-24	-12	0	+12	+24	PHOTO	-24	-12	0	+12	+24	T/S	-24	-12	0	+12	+24
	Exp1	Exp2	Exp3	Exp4	Exp5																											
AE	-24	-12	0	+12	+24																											
TEXT	-24	-12	0	+12	+24																											
PHOTO	-24	-12	0	+12	+24																											
T/S	-24	-12	0	+12	+24																											
48	01	Front/rear scan direction (Outline) (1) Front/rear scanning direction magnification ratio auto correction: (Performed by changing the set value of ZOOM DATA register for ASIC.) The width of the reference line marked on the shading correction plate is scanned to perform the front/rear direction magnification ratio adjustment automatically. (Performed by changing the set value of ZOOM DATA register for ASIC.) (2) Front/rear scanning direction magnification ratio manual correction: Used to set the front/rear (main scanning) direction magnification ratio by key operations. (Performed by changing the set value of ZOOM DATA register for ASIC.) (3) Scanning direction magnification ratio correction: The scanning direction magnification ratio in the OC mode is set by key operations. (Performed by changing the scanning speed.) (4) SPF mode scanning direction magnification ratio correction: The scanning direction magnification ratio in the OC mode is set by key operations. (Performed by changing the scanning speed.) (Operation/Procedure) 1. When this simulation is executed, the current set value is displayed in two digits. (Center value: 50) 2. When the copy mode select key is pressed, the setting mode and the setting display are changed sequentially. * The selected adjustment mode is indicated by the lamps as follows: 3. In the front/rear scanning direction adjustment, when the START key is pressed, the mirror base unit moves to the white plate for shading and the width of the reference line is read and the correction value is calculated and displayed and the value is stored. In the case of the manual adjustment, enter the adjustment value with the 10-key and press the START key. Then the entered value is stored and a copy is made. (An increase of 1 in the set value corresponds to an increase of 1&.) 4. Press the clear key to store the set value and exit the simulation. <table><tr><td>Adjustment mode</td><td>Lamps ON</td></tr><tr><td>Front/rear direction magnification ratio auto correction</td><td>AE lamp</td></tr><tr><td>Front/rear direction magnification ratio manual correction</td><td>TEXT lamp</td></tr><tr><td>Scanning direction magnification ratio correction</td><td>PHOTO lamp</td></tr><tr><td>SPF mode scanning direction magnification ratio correction</td><td>AE, TEXT, PHOTO lamps</td></tr></table> In the front-rear direction magnification ratio correction: (1) The result of calculation of the scan correction value is ±5% or less, “- -” is displayed. (Cause) The white plate reference position error or the lens unit installing error (2) In case of a scanning error of the reference line, the JAM lamp is turned on. (Cause) CCD error or no white plate *) If the automatic correction of magnification ratio does not work properly, adjust and correct manually.	Adjustment mode	Lamps ON	Front/rear direction magnification ratio auto correction	AE lamp	Front/rear direction magnification ratio manual correction	TEXT lamp	Scanning direction magnification ratio correction	PHOTO lamp	SPF mode scanning direction magnification ratio correction	AE, TEXT, PHOTO lamps																				
Adjustment mode	Lamps ON																															
Front/rear direction magnification ratio auto correction	AE lamp																															
Front/rear direction magnification ratio manual correction	TEXT lamp																															
Scanning direction magnification ratio correction	PHOTO lamp																															
SPF mode scanning direction magnification ratio correction	AE, TEXT, PHOTO lamps																															

Main code	Sub code	Content																
50	01	Lead edge image position adjustment + Paper lead edge/rear edge void adjustment (Outline) This adjustment is used to adjust the copy image position and lead edge/rear edge void amount on the copy paper by adjusting the image scan start position and the print start position (resist roller ON timing) at 100%. (Operation/Procedure) - When this simulation is executed, the currently set value is displayed in two digits. (Center value: 50) - When the copy mode select key is pressed, each setting mode and the display are changed. * The selected adjustment mode is indicated by the lamps as shown in the table below. - Enter the adjustment value with the 10-key and press the start key. The set value is stored and a copy is made. (When the set value is increased by 1, the void amount is shifted by 0.1 mm.) - When the clear key is pressed, the set value is stored and the simulation mode is terminated. <table><tr><th>Adjustment mode</th><th>Lighting lamps</th></tr><tr><td>Print start position (Main cassette)</td><td>AE, Main cassette lamps</td></tr><tr><td>Print start position (2nd cassette)</td><td>AE, 2nd lamps</td></tr><tr><td>Print start position (Manual paper feed)</td><td>AE, Manual feed lamps</td></tr><tr><td>Image lead edge void quantity</td><td>TEXT lamp</td></tr><tr><td>Image scan start position</td><td>PHOTO lamp</td></tr><tr><td>Image rear edge void quantity</td><td>AE, TEXT, PHOTO lamps</td></tr><tr><td>SPF image scan start position</td><td>AE, TEXT lamps</td></tr></table> (Adjustment method) - Set the print start position (A: AE ON), the lead edge void amount (B: TEXT ON), the scanning start position (C: PHOTO ON) to zero and make a copy of a scale at 100%. * When C is increased by 10, the image loss is decreased by 1 mm. (Default: 5) - Measure the image loss R (mm) of the scale. Set as $C = 10 \times R$ (mm). (Example: Set to 30.) * When the value of A is increased by 10, the image lead edge is shifted toward the paper lead edge by 1 mm. (Default: 50) - Measure the distance H (mm) from the paper lead edge to the image print start position. Set as $A = 10 \times R$ (mm). (Example: Set to 50.) * When the value of B is increased by 10, the void is increased by about 1 mm. (For 25 or less, however, the void amount becomes zero.) - Set the lead edge void amount as $B = 50$ (2.5 mm). (Default: 50) * When the value of B is increased by 10, the void is increased by about 1 mm. (For 25 or less, however, the void amount becomes zero.) ☆ The SPF adjustment is made by adjusting the SPF image scan start position immediately after turning on the power.	Adjustment mode	Lighting lamps	Print start position (Main cassette)	AE, Main cassette lamps	Print start position (2nd cassette)	AE, 2nd lamps	Print start position (Manual paper feed)	AE, Manual feed lamps	Image lead edge void quantity	TEXT lamp	Image scan start position	PHOTO lamp	Image rear edge void quantity	AE, TEXT, PHOTO lamps	SPF image scan start position	AE, TEXT lamps
Adjustment mode	Lighting lamps																	
Print start position (Main cassette)	AE, Main cassette lamps																	
Print start position (2nd cassette)	AE, 2nd lamps																	
Print start position (Manual paper feed)	AE, Manual feed lamps																	
Image lead edge void quantity	TEXT lamp																	
Image scan start position	PHOTO lamp																	
Image rear edge void quantity	AE, TEXT, PHOTO lamps																	
SPF image scan start position	AE, TEXT lamps																	

Main code	Sub code	Content																						
50	10	Paper center offset + OC/Document center offset + SPF document center offset (Outline) The center offset position of copy image on the copy paper and that of document scan are adjusted by adjusting the scan left margin of ASIC and the print left margin register set value. (Operation/Procedure) - When this simulation is executed, the currently set value is displayed. - For a machine with a multi manual paper feed unit installed, when the copy mode select key is pressed, each set mode and display are changed. For a machine with a single manual paper feed unit installed, when the copy mode select key is pressed, each set mode and display are changed. ☆ Machine with a multi manual paper feed unit <table><tr><th>Adjustment mode</th><th>Display lamp</th></tr><tr><td>Print center offset (Main cassette paper feed)</td><td>AE, main cassette lamp</td></tr><tr><td>Print center offset (2nd cassette paper feed)</td><td>AE, 2nd cassette lamp</td></tr><tr><td>Print center offset (Manual paper feed)</td><td>AE, Manual paper feed lamp</td></tr><tr><td>OC/Document center offset</td><td>AE, TEXT lamp</td></tr><tr><td>SPF/Document center offset</td><td>AE, TEXT, PHOTO lamp</td></tr></table> ☆ Machine with a single manual paper feed unit <table><tr><th>Adjustment mode</th><th>Display lamp</th></tr><tr><td>Print center offset (Main cassette paper feed)</td><td>AE, Main cassette lamp</td></tr><tr><td>Print center offset (Manual paper feed)</td><td>AE lamp (Blinking)</td></tr><tr><td>OC/Document center offset</td><td>AE, TEXT lamp</td></tr><tr><td>SPF/Document center offset</td><td>AE, TEXT, PHOTO lamp</td></tr></table>	Adjustment mode	Display lamp	Print center offset (Main cassette paper feed)	AE, main cassette lamp	Print center offset (2nd cassette paper feed)	AE, 2nd cassette lamp	Print center offset (Manual paper feed)	AE, Manual paper feed lamp	OC/Document center offset	AE, TEXT lamp	SPF/Document center offset	AE, TEXT, PHOTO lamp	Adjustment mode	Display lamp	Print center offset (Main cassette paper feed)	AE, Main cassette lamp	Print center offset (Manual paper feed)	AE lamp (Blinking)	OC/Document center offset	AE, TEXT lamp	SPF/Document center offset	AE, TEXT, PHOTO lamp
Adjustment mode	Display lamp																							
Print center offset (Main cassette paper feed)	AE, main cassette lamp																							
Print center offset (2nd cassette paper feed)	AE, 2nd cassette lamp																							
Print center offset (Manual paper feed)	AE, Manual paper feed lamp																							
OC/Document center offset	AE, TEXT lamp																							
SPF/Document center offset	AE, TEXT, PHOTO lamp																							
Adjustment mode	Display lamp																							
Print center offset (Main cassette paper feed)	AE, Main cassette lamp																							
Print center offset (Manual paper feed)	AE lamp (Blinking)																							
OC/Document center offset	AE, TEXT lamp																							
SPF/Document center offset	AE, TEXT, PHOTO lamp																							
18		Memory reverse position adjustment in duplex copy When this simulation is executed, the currently set correction value is displayed. Enter the desired correction value with the 10-key and press the print key. The entered value is stored. (The correction value ranges from 1 to 99. 0 or 50 for zero correction.) Front print in the S-D mode and even page print in the D-S mode are performed with reverse memory operation from the rear of the original. When, therefore, the print position adjustment of the output image is required, perform the adjustment as follows: The image direction in reverse memory copy is shown in Fig. 1. When the original scanning is made in the arrow direction, output images are printed from the rear edge of scanning. If, therefore, the print lead edge is shifted, set the reference chart so that the reference position is in the rear and use this simulation to change the simulation set value so that the lead edge of print images comes in the proper position. Printing is started at the print start position and executed from the final memory image data to the head data. By changing the position of the end data stored in memory with the simulation set value, the image lead edge position is adjusted and the read edge position of scanning is changed. Therefore, the end position of scanning is changed by the simulation set value to change the position of the end data stored in memory. The image lead edge is adjusted in this manner. Original transport direction Lead edge of scanning End position of scanning (Default: Scan cut by void(1)) Rear edge of scanning Scanning direction Paper transport direction Print lead edge Lead edge void (1) Print start position Rear edge void Print rear edge																						

Main code	Sub code	Content																										
50	19	Duplex copy rear edge void adjustment Used to adjust the rear edge void in duplex copy. (Operating procedure) When this simulation is executed, the currently set value is displayed in 2 digits. When the copy mode select key is pressed, the set mode and the display are switched sequentially. Enter the adjustment value with the 10-key and press the print key, and the entered value is stored and a copy is made. When the clear key is pressed, the entered value is stored and the simulation mode is terminated. (When the set value is increased by 1, the void is increased by about 0.1mm.) <table><tr><td>Adjustment mode</td><td>Lamp ON</td></tr><tr><td>Image cut rear edge void (RSPF)</td><td>AE lamp</td></tr><tr><td>Paper rear edge void</td><td>TEXT lamp</td></tr></table>	Adjustment mode	Lamp ON	Image cut rear edge void (RSPF)	AE lamp	Paper rear edge void	TEXT lamp																				
Adjustment mode	Lamp ON																											
Image cut rear edge void (RSPF)	AE lamp																											
Paper rear edge void	TEXT lamp																											
51	02	Resist quantity adjustment Used to adjust the contact pressure of paper onto the copier resist roller and the RSPF resist roller. (Operation/Procedure) 1. When this simulation is executed, the currently set value is displayed. 2. In a machine with the multi paper feed unit installed, press the copy mode select key, and each setting mode and display are changed sequentially. In a machine with the single paper feed unit installed, press the copy mode select key, and each setting mode and display are changed sequentially. * The selected adjustment mode is indicated by the lamps as follows: 3. Enter the adjustment value with the 10-key and press the SORT key. Then the set value is stored and a copy is made. 4. Press the clear key to store the set value and exit the simulation. * Machine with the multi manual paper feed <table><tr><td>Adjustment mode</td><td>Display lamp</td></tr><tr><td>Main cassette paper feed</td><td>AE, Main cassette lamp</td></tr><tr><td>2nd cassette paper feed</td><td>AE, 2nd cassette lamp</td></tr><tr><td>Manual paper feed</td><td>AE, Manual paper feed lamp</td></tr><tr><td>RSPF document feed (front)</td><td>AE, TEXT, PHOTO lamp</td></tr><tr><td>RSPF document feed (back)</td><td>AE, TEXT lamp</td></tr><tr><td>Duplex back</td><td>TEXT, PHOTO lamp</td></tr></table> * Machine with the single manual paper feed <table><tr><td>Adjustment mode</td><td>Display lamp</td></tr><tr><td>Main cassette paper feed</td><td>AE, Main cassette lamp</td></tr><tr><td>Manual paper feed</td><td>AE blinking (Main cassette lamp ON)</td></tr><tr><td>RSPF document feed (front)</td><td>AE, TEXT, PHOTO lamp</td></tr><tr><td>RSPF document feed (back)</td><td>AE, TEXT lamp</td></tr><tr><td>Duplex back</td><td>TEXT, PHOTO lamp</td></tr></table>	Adjustment mode	Display lamp	Main cassette paper feed	AE, Main cassette lamp	2nd cassette paper feed	AE, 2nd cassette lamp	Manual paper feed	AE, Manual paper feed lamp	RSPF document feed (front)	AE, TEXT, PHOTO lamp	RSPF document feed (back)	AE, TEXT lamp	Duplex back	TEXT, PHOTO lamp	Adjustment mode	Display lamp	Main cassette paper feed	AE, Main cassette lamp	Manual paper feed	AE blinking (Main cassette lamp ON)	RSPF document feed (front)	AE, TEXT, PHOTO lamp	RSPF document feed (back)	AE, TEXT lamp	Duplex back	TEXT, PHOTO lamp
Adjustment mode	Display lamp																											
Main cassette paper feed	AE, Main cassette lamp																											
2nd cassette paper feed	AE, 2nd cassette lamp																											
Manual paper feed	AE, Manual paper feed lamp																											
RSPF document feed (front)	AE, TEXT, PHOTO lamp																											
RSPF document feed (back)	AE, TEXT lamp																											
Duplex back	TEXT, PHOTO lamp																											
Adjustment mode	Display lamp																											
Main cassette paper feed	AE, Main cassette lamp																											
Manual paper feed	AE blinking (Main cassette lamp ON)																											
RSPF document feed (front)	AE, TEXT, PHOTO lamp																											
RSPF document feed (back)	AE, TEXT lamp																											
Duplex back	TEXT, PHOTO lamp																											
	06	SPF exposure correction (Outline) The APF exposure correction amount is adjusted by adjusting the change in Vref voltage for the OC mode. (Operation/Procedure) 1. When this simulation is executed, the currently set value is displayed. 2. Enter the adjustment value with the 10-key and press the start key. The entered value is stored and a copy is made. * When the adjustment value is changed by 1, the D/A output is changed by +1 digit (dark) for OC exposure. When it is changed by -1, the output is changed by -1 digit (light). 3. When the clear key is pressed, the entered value is stored and the simulation mode is terminated.																										
61	03	Polygon motor check (HSYNC output check) (Operation/Procedure) When the START key is pressed, HSYNC is performed and the polygon motor is rotated for 30 sec. At that time, the Zoom lamp is lighted for 100msec every time when HSYNC is detected.																										

Main code	Sub code	Content
63	01	Shading check (Outline) Used to display the detection level of the white plate for shading. (Vref of AD conversion IC is fixed.) (Operation/Procedure) When the START key is pressed, the mirror base unit moves to the white plate for shading and Vref+ voltage of AD conversion IC is set to 4.5V and Vref- voltage to 0.5V, and the copy lamp is lighted. This state is kept for 10 sec, and the level of one pixel at the center is detected every second to display on the value display section.
64	1	Self print only with the engine (1 by 2 mode) (Outline) Used to print in the 1 by 2 mode by ignoring the state of the optical system. (Operation/Procedure) 1. When this simulation is executed, warming up is made and the ready lamp is lighted. 2. Select with the cassette select key and press the start key. Paper is fed from the selected cassette and printing is performed. In the 1 by 2 mode, one line is printed and two lines are not printed.
67	14	PCL PWB program download Used to download the PCL PWB control program. (Operation/Procedure) 1. Download procedures 1) When the simulation code is entered, the Ready lamp lights up and the Online lamp goes off. 2) When the PRINT switch is pressed, the Read lamp goes off and the Flash ROM data deleting operation is started. 3) After completion of deletion, the Online lamp lights up. 4) Enter the DOS mode PC, and execute "COPY/Bxxxx.BIN LPT:", and downloading is started. The Online lamp blinks. 5) After completion of downloading, perform the SUM check. If there is no problem, the Online lamp goes off and the Ready lamp lights up. If there is any problem, "F9-10: PCL PWB trouble" is displayed. 6) Turn OFF/ON the power. 2. When downloading is failed, turn OFF/ON the power and perform the download procedures of 1 again. 3. Necessary items for Flash downloading 1) PC 2) Parallel cable 3) Program data file

3. TROUBLE CODES

A. Trouble codes list

Main code	Sub code	Trouble content	Detail of trouble
E7	01	Duplex model memory setup error, memory not-detected error	The memory is not set properly or the memory capacity is not set to the duplex setup (6M). Cancel method: Set SIM 26-39 code number to 2.
E7	03	HSYNC not detected.	LSU (laser diode, reception element, APC circuit) trouble LSU drive circuit (ASIC) trouble
E7	04	CCD white level trouble	CCD drive circuit (CCD PWB, ASIC harness) trouble Copy lamp lighting trouble (Copy lamp, inverter PWB)
E7	05	CCD black level trouble	CCD drive circuit (CCD PWB, ASIC, harness) trouble
E7	12	Shading trouble (White correction)	Dirt on white plate for scanning white level
E7	14	ASIC connection trouble	Improper connection between CPU and ASIC (pattern cut, improper connection of lead pin)
E7	15	Copy lamp disconnection trouble	Copy lamp or copy lamp drive circuit (inverter PWB) trouble Copy lamp disconnection
L1	00	Feeding is not completed within the specified time after starting feeding.	When the mirror base is returned for the specified time (6 sec) in mirror initializing after turning on the power, the mirror home position sensor (MHPS) does not turn OFF. Or when the mirror base is fed for the specified time (about 6 sec) after start of copy return, the mirror home position sensor (MHPS) does not turn OFF.
L3	00	Return is not completed within the specified time.	When the mirror base is returned for the specified time (6 sec) in mirror initializing after turning on the power, the mirror home position sensor (MHPS) does not turn ON. Or when the mirror base is returned for the specified time (about 6 sec) after start of copy return, the mirror home position sensor (MHPS) does not turn ON.

Main code	Sub code	Trouble content	Detail of trouble
L4	01	Main motor lock	When the main motor encoder pulse is not detected for 100msec.
L6	10	Polygon motor lock	The lock signal (specified rpm signal) does not return within a certain time (about 20sec) from starting the polygon motor rotation
H2	00	Thermistor open detection	The fusing thermistor is open.
H3	00	Heat roller abnormally high temperature	The fusing temperature rises above 240°C.
H4	00	Heat roller abnormally low temperature	The fusing temperature does not reach 185°C within 27 sec of turning on the power, or the fusing temperature keeps at 140°C.
U2	01	Counter sum check error	When the counter check sum value stored in the EEPROM is abnormal.
U2	04	EEPROM serial communication error	When a communication trouble occurs with the EEPROM.

Main code	Sub code		Detail of trouble
F9	10	Content	Printer PWB trouble
		Detail	Communication trouble between MCU and PRT
		Cause	Printer PWB connector disconnection Printer unit PWB MCU PWB harness failure Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the printer PWB.
	80	Content	Printer PWB communication trouble (protocol)
		Detail	Communication trouble between MCU and printer PWB (Protocol error)
		Cause	Printer PWB connector disconnection Printer PWB MCU PWB harness failure Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the printer PWB.
	81	Content	Printer PWB communication trouble (Parity)
		Detail	Communication trouble between MCU and printer PWB (Parity error)
		Cause	Printer PWB connector disconnection Printer PWB MCU PWB harness failure Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the printer PWB.
	82	Content	Printer PWB communication trouble (Overrun)
		Detail	Communication trouble between MCU and printer PWB (Overrun error)

Main code	Sub code		Detail of trouble
F9	82	Cause	Printer PWB connector disconnection Printer PWB MCU PWB harness failure Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the Printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the Printer PWB.
	84	Content	Printer PWB communication trouble (Framing)
		Detail	Communication trouble between MCU and printer PWB (Framing error)
		Cause	Printer PWB connector disconnection Printer PWB MCU PWB harness failure Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the Printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the Printer PWB.
	88	Content	Printer PWB communication trouble (Time-out)
		Detail	Communication trouble between MCU and printer PWB (Time-out error)
		Cause	Printer PWB connector disconnection Printer PWB MCU PWB harness failure Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the Printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the Printer PWB.
U2	40	Content	Serial communication error with memory device chip
F2	04	Content	Toner cartridge error (Use of toner cartridge is inhibited.)

[10] USER PROGRAM

The conditions of factory setting can be changed according to the use conditions.

Functions which can be set with the user program

Function	Contents	Factory setting
Auto clear.	When a certain time is passed after completion of copying, this function returns to the initial state automatically. The time to reach the initial state can be set in the range of 30 sec to 120 sec by the unit of 30 sec. This function can be disabled.	60 sec
Pre-heat.	- When the copier is left unused with the power ON, the power consumption is automatically reduced to about 40Wh/H (* Note). The time to start this function can be set in the range of 30 sec to 90 sec by the unit of 30 sec. This function cannot be disabled. - When this function is operated, the pre-heat lamp on the operation panel lights up. To return to the initial state, press any key on the operation panel. (When the COPY button is pressed, a copy is made after returning to the initial state.)	90 sec
Auto shut off passing time.	- When the copier is left unused with the power ON, the power consumption is automatically reduced to about 18Wh/H (* Note). The time to start this function can be set in the range of 2 min to 120 min. - When this function is operated, all the lamps except for the pre-heat lamp on the operation panel turn off. To return to the initial state, press the COPY button.	5 min
Stream feeding.	Only models with SPF.	Set
Auto shut off setting	Used to set or cancel this function.	Set

*Note: The power consumption values in pre-heat and auto shut off may be varied depending on the use conditions.

Change the setting.

Example: Changing the time to operate the auto shut off function
(Change from 60 sec to 90 sec)

1. Press the right and the left exposure adjustment keys simultaneously to start setting.

- Keep pressing the keys for five sec.
- Display lamps (, , ,  blink simultaneously and “-” is displayed on the copy quantity display.

2. Select the function code with the 10-digit key (copy quantity set key).

- The number of the selected function blinks on the digit of 10 on the copy quantity display.
- For auto clear, select “1.”
- For setting, refer to the following function codes.

Function name	Function code
Auto clear	1
Pre-heat	2
Auto shut off passing time	3
Stream feeding	4*
Auto shut off setting	5

[Cancel] If a wrong code is entered, press the clear key and enter the correct function code.

* SPF only

3. Press the COPY button.

- The number blinking on the digit of 10 of the copy quantity display is lighted.
- The number of the current set code blinks on the digit of 1.

4. Select the setting code with 1-digit key (copy quantity set key).

- To set to 90 sec, select “3.”
- For setting, refer to the following set codes.

Function name	Set code	Function name	Set code	Function name	Set code	Function name	Set code	Function name	Set code
Auto clear	0 (Cancel)	Pre-heat	0 (30 sec)	Auto shut off	0 (2 min)	Stream feeding	0 (Cancel)	Auto shut off setting	0 (Cancel)
	1 (30 sec)		1 (60 sec)		*1 (5 min)		*1 (Setting)		*1 (Setting)
	*2 (60 sec)		*2 (90 sec)		2 (15 min)				
	3 (90 sec)				3 (30 min)				
	4 (120 sec)				4 (60 min)				
	5 (10 sec)				5 (120 min)				

* : Factory setting

- The number of the selected set code blinks on the digit of 1 of the copy quantity display.

[Cancel] When a wrong number of the function code is set, press the clear key and perform the procedure again from 2.

5. Press the COPY button.

- The number blinking on the digit of 1 of the copy quantity display is lighted up. This means the setting is completed.

[Note] To set another function, press the clear key after completion of this operation and perform the procedure from 2.

6. Press either one of exposure adjustment keys (or) to complete the setting.

- Display lamps (, , , ) go off and the copy quantity display returns to the normal state.

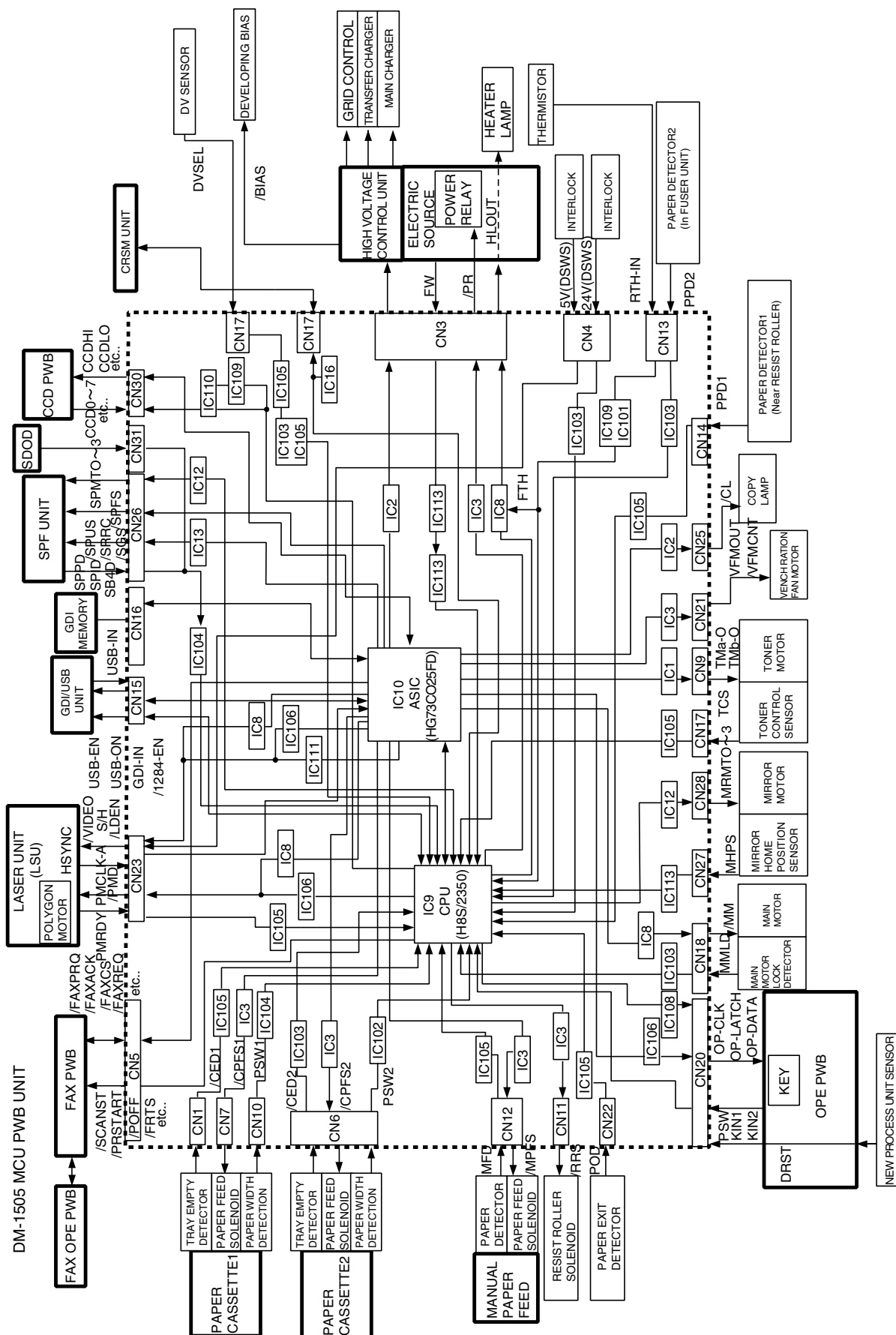
1. Block diagram

A. Overall block diagram

The diagram illustrates the MCU PWB Overall block diagram, showing the interconnection of various components. The central components are the CPU and ASIC, which are connected to a variety of peripheral units and memory. The diagram is organized into several functional blocks:

- Other Inputs:** A group of input modules including MHPS, RTH, TCS, PSW1, PSW2, POD, PPD1, PPD2, CED1, CED2, MMLD, DVSEL, and SDOD.
- Power Unit:** A block containing a High Voltage Control Unit and a Power Unit, which manage the system's power supply.
- Memory:** Includes SRAM (Static Random Access Memory) and EPROM (Erasable Programmable Read-Only Memory).
- Control and Interface:** Includes the CRSM UNIT, INTERLOCK SWITCH, and various control lines like BIAS, TC, HL, and FM.
- Other Loads:** A group of output modules including MIRROR MOTOR, MAIN MOTOR, VFM, CPFS1, MPFS, and COPY LAMP.
- Other Components:** Includes the JITTER SYNC IC, AND gates, UART, and various connectors (CN9, CN15, CN5, CN3, CN16, CN26, CN30, CN23, CN20).

The diagram shows the complex interconnection of these components, with the CPU and ASIC acting as the central processing and control units. The power unit and memory are essential for the system's operation, while the other inputs and loads provide the necessary data and control signals.



2. Circuit descriptions

A. Man PWB (MCU)

(1) CPU signal table

PIN No.	Signal code	Input/output	Operating
1	/CS1	Output	Chip Select for SRAM
2	/CS0	Output	Chip Select for EPROM
3			D-GND
4			D-GND
5			5V
6	A0	Output	Address Bus (NC-pull up)
7	A1	Output	Address Bus
8	A2	Output	Address Bus
9	A3	Output	Address Bus
10			D-GND
11	A4	Output	Address Bus
12	A5	Output	Address Bus
13	A6	Output	Address Bus
14	A7	Output	Address Bus
15	A8	Output	Address Bus
16	A9	Output	Address Bus
17	A10	Output	Address Bus
18	A11	Output	Address Bus
19			D-GND
20	A12	Output	Address Bus
21	A13	Output	Address Bus
22	A14	Output	Address Bus
23	A15	Output	Address Bus
24	A16	Output	Address Bus
25	A17	Output	Address Bus
26	A18	Output	Address Bus
27	A19	Output	Address Bus (NC-pull up)
28			D-GND
29	A20	Output	Address Bus (NC-pull up)
30			NC-pull up
31	(SPPD)	Interruption level input	SPF Paper Pass Detector
32	USB-IN	Input	USB Connector-In Detect
33	(MHPS)	Interruption level input	Mirror Home Position Sensor
34	/CPU SYNC	Interruption level input	Horizontal Synchronous (from G/A)
35			D-GND
36			D-GND
37	ZC	Interruption level input	Zero-cross signal
38	/ASICINT	Interruption level input	Intterrupt from G/A

PIN No.	Signal code	Input/output	Operating
39			5V
40	D0	Data input/output	Data Bus
41	D1	Data input/output	Data Bus
42	D2	Data input/output	Data Bus
43	D3	Data input/output	Data Bus
44			D-GND
45	D4	Data input/output	Data Bus
46	D5	Data input/output	Data Bus
47	D6	Data input/output	Data Bus
48	D7	Data input/output	Data Bus
49	D8	Data input/output	Data Bus
50	D9	Data input/output	Data Bus
51	D10	Data input/output	Data Bus
52	D11	Data input/output	Data Bus
53			D-GND
54	D12	Data input/output	Data Bus
55	D13	Data input/output	Data Bus
56	D14	Data input/output	Data Bus
57	D15	Data input/output	Data Bus
58			5V
59	(OP-DATA)	Output	Data Signal for Operation Panel
60	FTXD	Output	TXD for Additional Board
61	FRTS	Output	RTS for Additional Board
62	FRXD	Input	RXD for Additional Board
63	(OP-CLK)	Output	Clock for Operation Panel
64	TMON	Output	Power Supply Signal for Toner Motor Driver IC
65			D-GND
66	FCTS	Input	CTS for Additional Board
67			D-GND
68			D-GND

PIN No.	Signal code	Input/output	Operating
69	PSW	Input	Print switch input
70	KIN1	Input	Key input 1
71	KIN2	Input	Key input 2
72	TMCLK	Timer output	Clock for Toner Motor
73	/TMEN	Output	On-Off Control for Toner Motor
74	/POFF	Output	Power Off Signal for Additional Board
75	PMCLK	Timer output	Clock for Polygon Motor
76	/PRSTART	Output	Printing Start Signal
77	/SCANSP	Output	Scanning Stop Signal
78	/SCANST	Output	Scanning Start Signal
79	HL	Output (Timer output)	On-Off Control for Heater Lamp
80	WDOVF-	Output	Watchdog Timer
81	RES-	Input	Reset
82		Input	pull up
83		Input	pull up
84			5V
85	XTAL		Clock
86	EXTAL		Clock
87			D-GND
88	CPUCLK	Output	System Clock for G/A
89			5V
90	/AS	Output	pull up
91	/RD	Output	Read Signal
92	/HWR	Output	Write Signal (High Address)
93	/LWR	Output	Write Signal (Low Address)
94	SELIN3	Output	Input select 3
95	SELIN2	Output	Input select 2
96	SELIN1	Output	Input select 1
97	PR	Output	Power relay control PR
98	RRS	Output	Resist roller solenoid RPC
99			D-GND
100			D-GND
101	SCLK	Output	Clock Line for EEPROM
102	SDA	Output	Data Line for EEPROM
103			A5V
104			Analog Reference Voltage-A5V
105	RTH	Analog input	Fusing Thermister
106			
107	SIN1	Input	Sensor input 1
108	SIN2	Input	Sensor input 2
109	SIN3	Input	Sensor input 3

PIN No.	Signal code	Input/output	Operating
110	SIN4	Input	Sensor input 4
111	DAH	Analog output	Reference Voltage (High) for CCD
112	DAL	Analog output	Reference Voltage (Low) for CCD
113			AN-GND
114			D-GND
115	DMT-3	Motor output	Duplex Motor Excitement
116	DMT-2	Motor output	Duplex Motor Excitement
117	DMT-1	Motor output	Duplex Motor Excitement
118	DMT-0	Motor output	Duplex Motor Excitement
119	MRMT3	Motor output	Mirror Motor Excitement
120	MRMT2	Motor output	Mirror Motor Excitement
121	MRMT1	Motor output	Mirror Motor Excitement
122	MRMT0	Motor output	Mirror Motor Excitement
123		Input	CPU MODE SET <MODE 4> - GND
124		Input	CPU MODE SET <MODE 4> - GND
125		Input	CPU MODE SET <MODE 4> - Vcc
126			NC-pull up
127	DRST	Input	Drum reset detection
128	/CS2	Output	Chip Select for ASIC

* The signals which are hatched are added or revised to or from the AL-1000.

(2) ASIC (Signal table)

PIN No.	Signal name	IN/OUT	Connected to	Description
1	/SCANSPP	IN	CPU (I/O)	Scanner process interrupt signal
2	/PRSTART	IN	CPU	Print start trigger signal
3	/TMEN	IN	CPU	Toner motor ON/OFF
4	TMCLK	IN	CPU	Toner motor reference clock
5	3.3V	Power		
6	CPUAD7	IN	CPU	CPU address bus
7	CPUAD6	IN	CPU	CPU address bus
8	GND	Power		
9	CPUAD5	IN	CPU	CPU address bus
10	CPUAD4	IN	CPU	CPU address bus
11	CPUAD3	IN	CPU	CPU address bus
12	CPUAD2	IN	CPU	CPU address bus
13	CPUAD1	IN	CPU	CPU address bus
14	/CPUSYNC	OUT	CPU	Horizontal synchronization signal
15	/ASICINT	OUT	CPU	Interruption request signal
16	/CS2	IN	CPU	CPU chip select signal
17	/RESET	IN	RESET IC	Reset signal
18	5V	Power		
19	GND	Power		
20	3.3V	Power		
21	GND	Power		
22	MDATA15	IN/OUT	DRAM	Data bus of DRAM (page memory)
23	MDATA14	IN/OUT	DRAM	Data bus of DRAM (page memory)
24	MDATA13	IN/OUT	DRAM	Data bus of DRAM (page memory)
25	MDATA12	IN/OUT	DRAM	Data bus of DRAM (page memory)
26	MDATA11	IN/OUT	DRAM	Data bus of DRAM (page memory)
27	MDATA10	IN/OUT	DRAM	Data bus of DRAM (page memory)
28	MDATA9	IN/OUT	DRAM	Data bus of DRAM (page memory)
29	MDATA8	IN/OUT	DRAM	Data bus of DRAM (page memory)
30	MDATA7	IN/OUT	DRAM	Data bus of DRAM (page memory)
31	3.3V	Power		
32	MDATA6	IN/OUT	DRAM	Data bus of DRAM (page memory)
33	MDATA5	IN/OUT	DRAM	Data bus of DRAM (page memory)
34	GND	Power		
35	MDATA4	IN/OUT	DRAM	Data bus of DRAM (page memory)
36	MDATA3	IN/OUT	DRAM	Data bus of DRAM (page memory)
37	MDATA2	IN/OUT	DRAM	Data bus of DRAM (page memory)
38	MDATA1	IN/OUT	DRAM	Data bus of DRAM (page memory)
39	MDATA0	IN/OUT	DRAM	Data bus of DRAM (page memory)
40	/RAS0	OUT	DRAM	RAS signal 0 of DRAM (page memory)
41	/RAS1	OUT	DRAM	RAS signal 1 of DRAM (page memory)
42	/RAS2	OUT	DRAM	RAS signal 2 of DRAM (page memory)
43	/RAS64	OUT	DRAM control (for panther)	(Reserved)
44	3.3V	Power		
45	/RAS16	OUT	DRAM control (for panther)	(Reserved)
46	MAD0	OUT	DRAM	Address bus of DRAM (page memory)

PIN No.	Signal name	IN/OUT	Connected to	Description
47	GND	Power		
48	MAD1	OUT	DRAM	Address bus of DRAM (page memory)
49	MAD2	OUT	DRAM	Address bus of DRAM (page memory)
50	MAD3	OUT	DRAM	Address bus of DRAM (page memory)
51	MAD4	OUT	DRAM	Address bus of DRAM (page memory)
52	MAD5	OUT	DRAM	Address bus of DRAM (page memory)
53	MAD6	OUT	DRAM	Address bus of DRAM (page memory)
54	MAD7	OUT	DRAM	Address bus of DRAM (page memory)
55	MAD8	OUT	DRAM	Address bus of DRAM (page memory)
56	MAD9	OUT	DRAM	Address bus of DRAM (page memory)
57	3.3V	Power		
58	MAD10	OUT	DRAM	Address bus of DRAM (page memory)
59	MAD11	OUT	DRAM	Address bus of DRAM (page memory)
60	GND	Power		
61	/CAS0	OUT	DRAM	CAS signal of DRAM (page memory)
62	/CAS1	OUT	DRAM	CAS signal of DRAM (page memory)
63	/OE	OUT	DRAM	Read enable signal of DRAM (page memory)
64	/WE	OUT	DRAM	Write enable signal of DRAM (page memory)
65	OUTD0	OUT	Reserved	
66	OUTD1	OUT	Reserved	
67	OUTD2	OUT	Reserved	
68	OUTD3	OUT	Reserved	
69	3.3V	Power		
70	OUTD4	OUT	Reserved	
71	OUTD5	OUT	Reserved	
72	GND	Power		
73	OUTD6	OUT	Reserved	
74	OUTD7	OUT	Reserved	
75	OUTD8	OUT	Reserved	
76	OUTD9	OUT	Reserved	
77	OUTD10	OUT	Reserved	
78	OUTD11	OUT	Reserved	
79	OUTD12	OUT	Reserved	
80	OUTD13	OUT	Reserved	
81	OUTD14	OUT	Reserved	
82	OUTD15	OUT	Reserved	
83	/HSYNC	OUT	PCL board	Horizontal sync signal with print area output only
84	/PCLPRD	IN	PCL board	Print video data (serial) from PCL board
85	/PCLREQ	OUT	PCL board	DREQ signal to PCL board
86	/PCLACK	IN	PCL board	ACK signal from PCL board
87	/PCLCS	IN	PCL board	
88	3.3V	Power		
89	GND	Power		
90	5V	Power		
91	GND	Power		
92	/FAXPRD	IN	Reserved	
93	/FAXREQ	OUT	Reserved	
94	/FAXACK	IN	Reserved	
95	3.3V	Power		

PIN No.	Signal name	IN/OUT	Connected to	Description
96	/FAXCS	IN	Reserved	
97	/ESPRD	IN	Electric sort board * (Reserved)	(Reserved)
98	GND	Power		
99	/ESREQ	OUT	Electric sort board * (Reserved)	(Reserved)
100	/ESACK	IN	Electric sort board * (Reserved)	(Reserved)
101	/ESCS	IN	Electric sort board * (Reserved)	(Reserved)
102	PARAD0	IN/OUT	1284 board connector	DATA bus (IEEE1284 communication port)
103	PARAD1	IN/OUT	1284 board connector	DATA bus (IEEE1284 communication port)
104	PARAD2	IN/OUT	1284 board connector	DATA bus (IEEE1284 communication port)
105	PARAD3	IN/OUT	1284 board connector	DATA bus (IEEE1284 communication port)
106	PARAD4	IN/OUT	1284 board connector	DATA bus (IEEE1284 communication port)
107	PARAD5	IN/OUT	1284 board connector	DATA bus (IEEE1284 communication port)
108	5V	Power		
109	PARAD6	IN/OUT	1284 board connector	DATA bus (IEEE1284 communication port)
110	PARAD7	IN/OUT	1284 board connector	DATA bus (IEEE1284 communication port)
111	GND	Power		
112	/REV	OUT	1284 board connector	ECP mode I/O select (LOW:P → H)
113	INIT	IN	1284 board connector	INIT signal (IEEE1284 communication port)
114	/SLCTIN	IN	1284 board connector	/SLCTIN signal (IEEE1284 communication port)
115	/AUTOFD	IN	1284 board connector	/AUTOFD signal (IEEE1284 communication port)
116	/STB	IN	1284 board connector	/STB signal (IEEE1284 communication port)
117	/ACK	OUT	1284 board connector	/ACK signal (IEEE1284 communication port)
118	BUSY	OUT	1284 board connector	BUSY signal (IEEE1284 communication port)
119	PE	OUT	1284 board connector	PE signal (IEEE1284 communication port)
120	/FAULT	OUT	1284 board connector	/FAULT signal (IEEE1284 communication port)
121	5V	Power		
122	SLCT	OUT	1284 board connector	/SLCTIN signal (IEEE1284 communication port)
123	/TESTPIN0	IN	TEST PIN	High: Normal Low: Test
124	GND	Power		
125	PFCLK	IN	Transmitter	Write clock
126	/TESTPIN1	IN	TEST PIN	High: Normal Low: Test
127	/SYNCEN	OUT	JITTER ADJUSTMENT IC	Jitter adjustment IC trigger signal
128	SD10	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
129	SD11	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
130	SD12	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
131	SD13	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
132	SD14	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
133	5V	Power		
134	SD15	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
135	SD16	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
136	GND	Power		
137	SD17	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
138	SOE1	OUT	SRAM (separation)	Read enable line to SRAM before area separation
139	SWE1	OUT	SRAM (separation)	Write enable line to SRAM before area separation
140	SCS1	OUT	SRAM (separation)	Chip select line to SRAM before area separation

PIN No.	Signal name	IN/OUT	Connected to	Description
141	SOE0	OUT	SRAM (separation)	Read enable line to SRAM before area separation
142	SWE0	OUT	SRAM (separation)	Write enable line to SRAM before area separation
143	SCS0	OUT	SRAM (separation)	Chip select line to SRAM before area separation
144	SD00	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
145	SD01	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
146	5V	Power		
147	SD02	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
148	SD03	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
149	GND	Power		
150	SD04	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
151	SD05	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
152	SD06	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
153	SD07	IN/OUT	SRAM (separation)	Data line to SRAM before are separation
154	SAD0	OUT	SRAM (separation)	Address line to SRAM before area separation
155	SAD1	OUT	SRAM (separation)	Address line to SRAM before area separation
156	SAD2	OUT	SRAM (separation)	Address line to SRAM before area separation
157	SAD3	OUT	SRAM (separation)	Address line to SRAM before area separation
158	SAD4	OUT	SRAM (separation)	Address line to SRAM before area separation
159	SAD5	OUT	SRAM (separation)	Address line to SRAM before area separation
160	SAD6	OUT	SRAM (separation)	Address line to SRAM before area separation
161	SAD7	OUT	SRAM (separation)	Address line to SRAM before area separation
162	GND	Power		
163	SAD8	OUT	SRAM (separation)	Address line to SRAM before area separation
164	SAD9	OUT	SRAM (separation)	Address line to SRAM before area separation
165	SAD10	OUT	SRAM (separation)	Address line to SRAM before area separation
166	SAD11	OUT	SRAM (separation)	Address line to SRAM before area separation
167	SAD12	OUT	SRAM (separation)	Address line to SRAM before area separation
168	SAD13	OUT	SRAM (separation)	Address line to SRAM before area separation
169	/f1	OUT	CCD PWB	CCD drive signal transfer clock (First phase)
170	/f2	OUT	CCD PWB	CCD drive signal transfer clock (Second phase)
171	/SH	OUT	CCD PWB	CCD drive signal shift pulse
172	5V	Power		
173	RS	OUT	CCD PWB	CCD drive signal reset pulse
174	SP	OUT	CCD PWB	CCD drive signal sampling hold pulse
175	GND	Power		
176	CP	OUT	CCD PWB	A/D conversion IC latch clock
177	BCLK	OUT	CCD PWB	CCD shield output latch signal
178	IDIN0	IN	CCD PWB (AD conversion)	Image scan data (after 8bit A/D conversion)
179	IDIN1	IN	CCD PWB (AD conversion)	Image scan data (after 8bit A/D conversion)
180	IDIN2	IN	CCD PWB (AD conversion)	Image scan data (after 8bit A/D conversion)
181	IDIN3	IN	CCD PWB (AD conversion)	Image scan data (after 8bit A/D conversion)
182	IDIN4	IN	CCD PWB (AD conversion)	Image scan data (after 8bit A/D conversion)
183	IDIN5	IN	CCD PWB (AD conversion)	Image scan data (after 8bit A/D conversion)
184	IDIN6	IN	CCD PWB (AD conversion)	Image scan data (after 8bit A/D conversion)

PIN No.	Signal name	IN/OUT	Connected to	Description
185	5V	Power		
186	IDIN7	IN	CCD PWB (AD conversion)	Image scan data (after 8bit A/D conversion)
187	/SDCLK	OUT	CHECK	Effective image area signal
188	GND	Power		
189	SFCLK	IN	Transmitter	CCD drive clock (48MHz), Also used as an internal clock.
190	TEST port 0	IN	AUTO SCAN TEST	High: Normal Low: Test
191	/SYNC	IN	LSU	Horizontal synchronization signal (HSYNC) from LSU
192	/LD	OUT	LSU	Laser drive signal
193	/LEND	OUT	LSU	Laser APC signal
194	USB-EN	OUT	GDI/USB PWB	USB port enable signal
195	1284-EN	OUT	GDI/USB PWB	1284 port enable signal
196	PORTOUT26	OUT		(Not used)
197	3.3V	Power		
198	PORTOUT25	OUT		(Not used)
199	PORTOUT24	OUT		(Not used)
200	GND	Power		
201	SGS	OUT	Tr array IC	SPF gate solenoid
202	SRRCL	OUT	Tr array IC	SPF resist roller solenoid
203	SPUS	OUT	Tr array IC	SPF PU solenoid
204	/READY	OUT	Reserved	
205	OP-LATCH	OUT	Tr array IC	Latch signal for operation circuit. Data latch at LOW.
206	MRPS2	OUT	Tr array IC	Mirror speed control signal. Mirror speed 2 at LOW.
207	MRPS1	OUT	Tr array IC	Mirror speed control signal. Mirror speed 1 at LOW.
208	SPFS	OUT	Tr array IC	SPF paper feed solenoid
209	SMSSEL	OUT	Tr array IC	SPF motor/Mirror motor select signal
210	3.3V	Power		
211	TC	OUT	Tr array IC	Transfer charger control signal. ON at HIGH.
212	GRIDL	OUT	Tr array IC	Main charger grid control signal. ON at HIGH.
213	GND	Power		
214	MC	OUT	Tr array IC	Main charger control signal. ON at HIGH.
215	BIASL	OUT	Tr array IC	DV bias voltage control signal. ON at HIGH.
216	BIASH	OUT	Tr array IC	DV bias voltage control signal. ON at HIGH.
217	BIAS	OUT	Tr array IC	DV bias output control signal. ON at HIGH.
218	CL	OUT	Tr array IC	Copy lamp control signal. ON at HIGH.
219	VFMCNT	OUT	Tr array IC	Ventilation fan rotating speed control signal. Low speed at HIGH, high speed at LOW.
220	VFM	OUT	Tr array IC	Ventilation fan control signal. Fan ON at HIGH.
221	LDEN	OUT	Tr array IC	Laser circuit control signal. Laser circuit ON at HIGH.
222	PMD	OUT	Tr array IC	Polygon motor control signal. Polygon motor ON at HIGH.
223	5V	Power		
224	MM	OUT	Tr array IC	Main motor control signal. Main motor ON at HIGH.
225	MPFS	OUT	Tr array IC	Manual paper feed solenoid control signal. Multi paper feed ON at HIGH.
226	GND	Power		
227	CPFS2	OUT	Tr array IC	Second cassette paper feed solenoid control signal. Second cassette paper feed at HIGH.
228	CPFS1	OUT	Tr array IC	Cassette paper feed solenoid control signal. One-stage cassette paper feed at HIGH.
229	TM	OUT	Tr array IC	Toner motor drive output (+)

PIN No.	Signal name	IN/OUT	Connected to	Description
230	TM_	OUT	Tr array IC	Toner motor drive output (-)
231	CPUD15	IN/OUT	CPU	CPU data bus
232	CPUD14	IN/OUT	CPU	CPU data bus
233	CPUD13	IN/OUT	CPU	CPU data bus
234	CPUD12	IN/OUT	CPU	CPU data bus
235	CPUD11	IN/OUT	CPU	CPU data bus
236	5V	Power		
237	CPUD10	IN/OUT	CPU	CPU data bus
238	CPUD9	IN/OUT	CPU	CPU data bus
239	GND	Power		
240	CPUD8	IN/OUT	CPU	CPU data bus
241	CPUD7	IN/OUT	CPU	CPU data bus
242	CPUD6	IN/OUT	CPU	CPU data bus
243	CPUD5	IN/OUT	CPU	CPU data bus
244	CPUD4	IN/OUT	CPU	CPU data bus
245	CPUD3	IN/OUT	CPU	CPU data bus
246	CPUD2	IN/OUT	CPU	CPU data bus
247	CPUD1	IN/OUT	CPU	CPU data bus
248	CPUD0	IN/OUT	CPU	CPU data bus
249	3.3V	Power		
250	/CPUWR	IN	CPU	CPU write signal
251	/CPURD	IN	CPU	CPU read signal
252	GND	Power		
253	CPUCLK	IN	CPU	CPU system clock
254	GND	Power		
255	TEST PORT1	IN	AUTO SCAN TEST	High: Normal Low: Test
256	/SCANST	IN	CPU (I/O)	Scanner process start signal

* The signals which are hatched are added or revised to or from AL-1000.

(3) Expanded PWB interface section

The MCU PWB and the expanded PWB are connected by CN5 connector to make serial communication (UART).

The FAX PWB uses signals in Table A, and the PCL PWB uses signals in Table B.

Recognition of FAX PWB or PCL PWB:

If /FREADY is LOW, the FAX PWB expansion is recognized.

If /PREADY is LOW, the PCL PWB expansion is recognized.

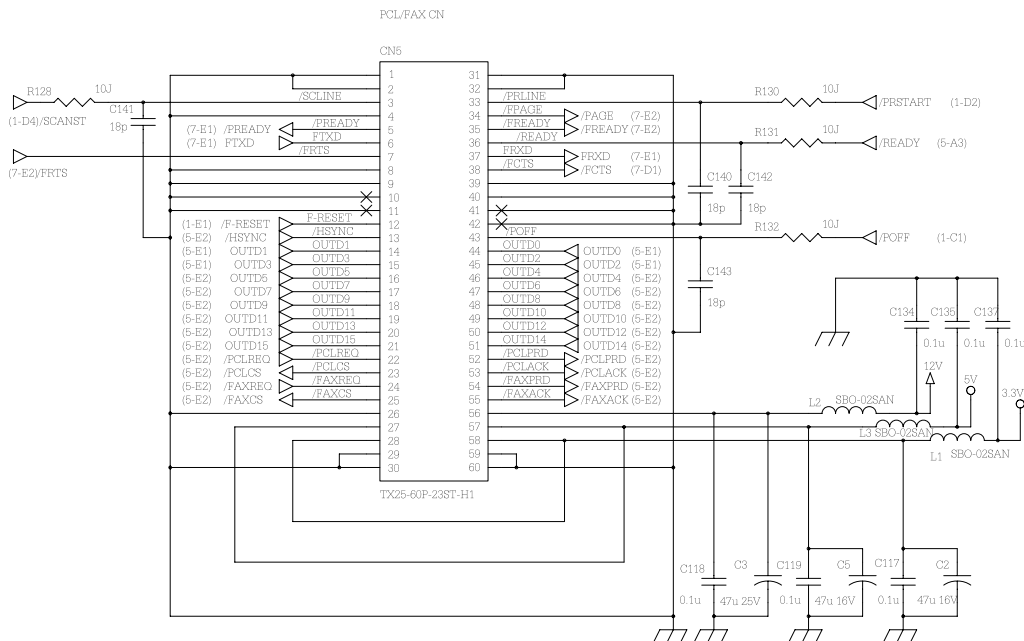


Table A (Signals used in the FAX PWB)

PIN No. (CN5)	Signal name	IN/OUT	Descriptions
3	/SCLINE	OUT	Effective input image area
6	FTXD	OUT	Serial communication data
7	/FRTS	OUT	Serial reception ready (Machine side)
12	/F-RESET	OUT	Reset signal
13	/HSYNC	OUT	Horizontal sync signal
14 ~ 21, 44 ~ 51	OUTD1 ~ OUTD15	OUT	Data to the expanded PWB
24	/FAXREQ	OUT	Data transfer REQ signal
25	/FAXCS	IN	OUTD bus enable signal
33	/PRLINE	OUT	Effective print area
34	/FPAGE	IN	Page data READY
35	/FREADY	IN	FAX PWB recognition signal
36	/READY	OUT	READY signal on the machine side
37	FRXD	IN	Serial communication data
38	/FCTS	IN	Serial reception READY (FAX side)
43	/POFF	OUT	Power OFF signal
54	/FAXPRD	IN	Video data from FAX PWB
55	/FAXACK	IN	Data transfer ACK signal

Table B (Signals used in PCL PWB)

PIN No. (CN5)	Signal name	IN/OUT	Descriptions
5	/PREADY	IN	PCL PWB recognition signal
6	FTXD	OUT	Serial communication data
7	/FRTS	OUT	Serial reception READY (Machine side)
12	/F-RESET	OUT	Reset signal
13	/HSYNC	OUT	Horizontal sync signal
34	/FPAGE	IN	Page data READY
36	/READY	OUT	READY signal on the machine side
37	FRXD	IN	Serial communication data
38	/FCTS	IN	Serial reception READY (PCL side)
52	/PCLPRD	IN	Video data from PCL PWB

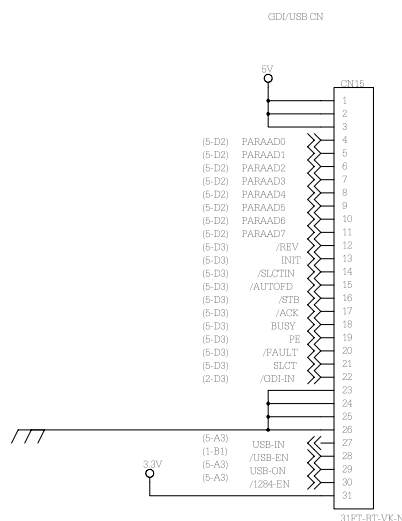
(4) 1284/USB circuit select control section

The GDI/USB PWB is connected to CN15 connector to control switching between IEEE1284 port and USB port.

If USB cable isn't connected to the GDI/USB PWB, the /1284-EN signal becomes LOW to allow the use of IEEE1284 port.

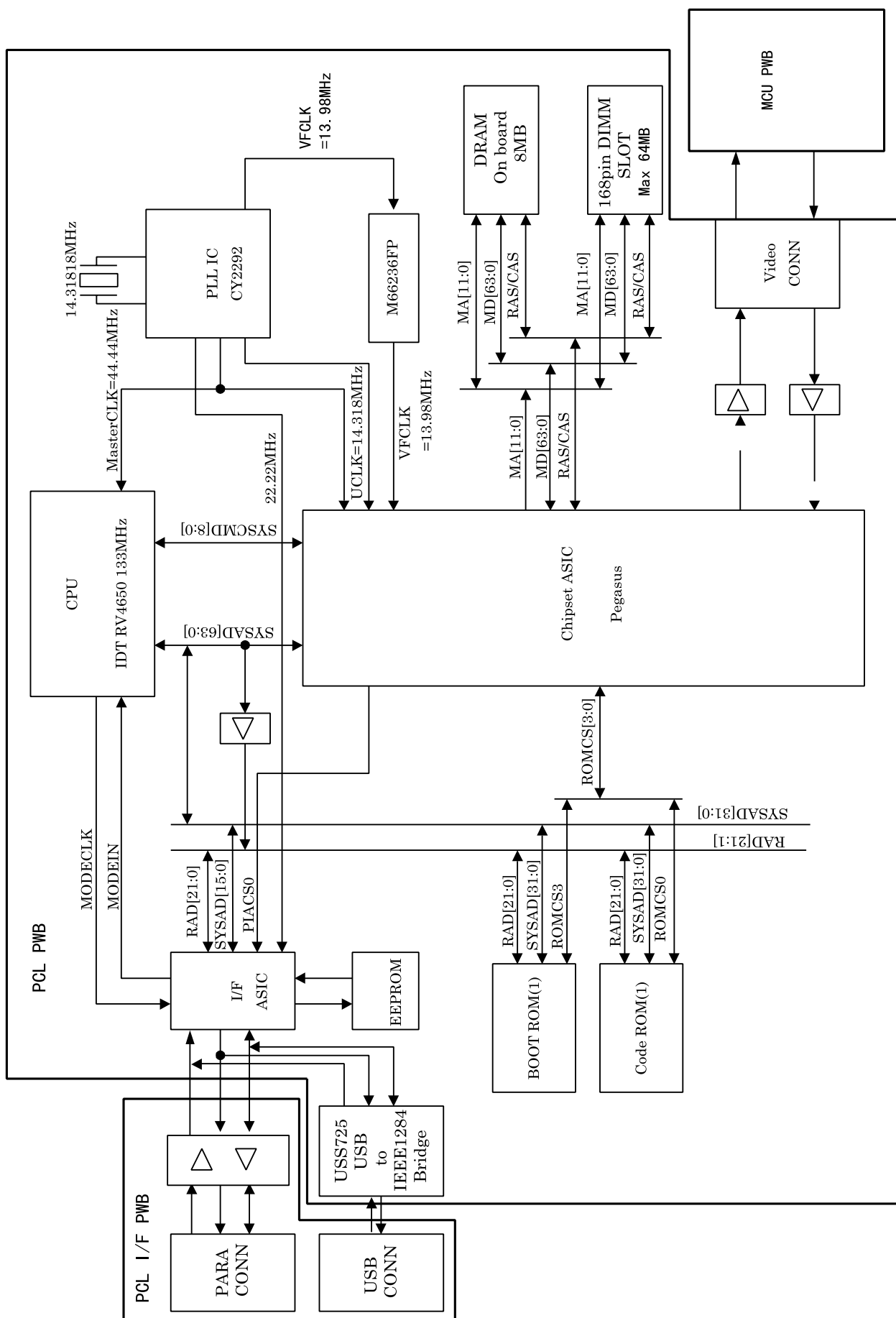
If USB cable is connected, the /USB-EN signal becomes LOW to allow the use of USB port.

Since USB has priority, when USB cable is connected, it is selected. That is, when USB cable is connected, IEEE1284 port (parallel port) is disabled.



3. PCL PWB Block diagram

A. Overall block diagram



4. Block diagram functional descriptions

Descriptions of each block

PCL PWB	Controls PCL print.
CPU	Control IC
Chipset ASIC	Image forming, ROM/RAM access
PLL IC	CPU/ASIC/M66236fp clock generation
M66236FP	Jitter adjustment IC
I/F ASIC	IEEE1284 parallel conversion ASIC
EEPROM	Stores device ID and data necessary for control.
BOOTROM (1)	Stores data necessary for booting programs.
Code ROM (1)	Stores PCL process program and fonts.
USS725 USB to IEEE1284 Bridge	Converts USB standard signals into IEEE1284 standard signals.
DRAM On board 8 MB	Work RAM for the system and PCL process
168 pin DIMM SLOT Max 64 MB	Work RAM for PCL process (Expanded by expansion RAM.)
Video CONN	Interface connector for communication between MCU PWB and PCL PWB
14.31818 MHz	PLL IC reference clock
PCL I/F PWB	Interface PWB for connection of external device and PCL PWB
PARACONN	IEEE1284 conforming Centronics connector
USB CONN	USB connector
MCU PWB	Digital copier main control PWB

Operational descriptions

Connected to PARACONN or USBCONN of PCL I/F PWB (CPWBF0057QS51).

Print data made by page description language is inputted from an external device.

The PCL I/F PWB (CPWBF0057QS51) is provided with two kinds of connectors for external devices. The suitable connector is determined according to the connection type with an external device as follows:

- An external device is connected to PARACONN, and not connected to USBCONN.
→ Data sent from the external device connected to PARACONN is printed.
- An external device is not connected to PARACONN, but connected to USBCONN.
→ Data sent from the external device connected to USBCONN is printed.
- An external device is connected to PARACONN, and not connected to USBCONN.
→ Data sent from the external device connected to USBCONN is printed.

The external device connected to PARACONN is not recognized.

Data inputted to PCL I/F PWB is inputted to PCL PWB and PCL-decoded and converted to generate BITMAP data for print.

To generate BITMAP data for print, DRAM On board 8 MB and the expansion RAM inserted into the 168 pin DIMM are used as the work area.

BITMAP data generated in PCL PWB are subject to jitter adjustment by M66236FP, and inputted to MCU PWB through Video CONN to perform laser output and print.

CPU (VHIIDT79RC465) I/O pin arrangement list (PCL Model)

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
1	N.C	N.C			N.C,
2	N.C	N.C			N.C
3	N.C	N.C			N.C
4	N.C	N.C			N.C
5	N.C	N.C			N.C
6	N.C	N.C			N.C
7	N.C	N.C			N.C
8	N.C	N.C			N.C
9	N.C	N.C			N.C
10	SYSAD11	SYSAD11	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
11	Vss	GND	IN		GND
12	Vcc	3.3V	IN		Power source
13	SYSCMD8	SYSCMD8	OUT	ASIC (KZ4H167V06)	System command data bus
14	SYSAD42	SYSAD42	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
15	SYSAD10	SYSAD10	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
16	SYSCMD7	SYSCMD7	OUT	ASIC (KZ4H167V06)	System command data bus
17	Vss	GND	IN		GND
18	Vcc	3.3V	IN		Power source
19	SYSAD41	SYSAD41	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
20	SYSAD9	SYSAD9	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
21	SYSCMD6	SYSCMD6	OUT	ASIC (KZ4H167V06)	System command data bus
22	SYSAD40	SYSAD40	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
23	Vss	GND	IN		GND
24	Vcc	3.3V	IN		Power source
25	SYSAD8	SYSAD8	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
26	SYSCMD5	SYSCMD5	OUT	ASIC (KZ4H167V06)	System command data bus
27	SYSADC4		IN		NC (3.3V pull up)
28	SYSADC0		IN		NC (3.3V pull up)
29	Vss	GND	IN		GND
30	Vcc	3.3V	IN		Power source
31	SYSCMD4	SYSCMD4	OUT	ASIC (KZ4H167V06)	System command data bus
32	SYSAD39	SYSAD39	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
33	SYSAD7	SYSAD7	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
34	SYSCMD3	SYSCMD3	OUT	ASIC (KZ4H167V06)	System command data bus
35	Vss	GND	IN		GND
36	Vcc	3.3V	IN		Power source
37	SYSAD38	SYSAD38	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
38	SYSAD6	SYSAD6	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
39	MODECLOCK	MODECLK	OUT	ASIC(KZ3H008302)	Boot mode clock
40	WR RDY	READY_	IN		External IC write ready
41	SYSAD37	SYSAD37	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
42	SYSAD5	SYSAD5	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
43	V _{SS}	GND	IN		GND
44	V _{CC}	3.3V	IN		Power source
45	N.C	N.C			N.C
46	N.C	N.C			N.C
47	N.C	N.C			N.C
48	N.C	N.C			N.C
49	N.C	N.C			N.C
50	N.C	N.C			N.C
51	N.C	N.C			N.C
52	N.C	N.C			N.C
53	N.C	N.C			N.C
54	N.C	N.C			N.C
55	N.C	N.C			N.C
56	N.C	N.C			N.C
57	SYSCMD2	SYSCMD2	OUT	ASIC (KZ4H167V06)	System command data bus
58	SYSAD36	SYSAD36	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
59	SYSAD4	SYSAD4	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
60	SYSCMD1	SYSCMD1	OUT	ASIC (KZ4H167V06)	System command data bus
61	V _{SS}	GND	IN		GND
62	V _{CC}	3.3V	IN		Power source
63	SYSAD35	SYSAD35	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
64	SYSAD3	SYSAD3	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
65	SYSCMD0	SYSCMD0	OUT	ASIC (KZ4H167V06)	System command data bus
66	SYSAD34	SYSAD34	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
67	V _{SS}	GND	IN		GND
68	V _{CC}	3.3V	IN		Power source
69	SYSAD2	SYSAD2	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
70	INT5		IN		NC (3.3V pull up)
71	SYSAD33	SYSAD33	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
72	SYSAD1	SYSAD1	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
73	V _{SS}	GND	IN		GND
74	V _{CC}	3.3V	IN		Power source
75	INT4		IN		NC (3.3V pull up)
76	SYSAD32	SYSAD32	IN/OUT	ASIC(KZ4H167V06)	System address data bus
77	SYSAD0	SYSAD0	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
78	INT3	PARINTR_	IN	ASIC(KZ3H008302)	Print request interruption input
79	V _{SS}	GND	IN		GND
80	V _{CC}	3.3V	IN		Power source
81	INT2	INTR2_	IN	ASIC(KZ4H167V06)	ASIC interruption 2
82	SYSAD16	SYSAD16	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
83	SYSAD48	SYSAD48	IN/OUT	ASIC (KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16244	System address data bus
84	INT1	INTR1_	IN	ASIC(KZ4H167V06)	ASIC interruption 1

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
85	Vss	GND	IN		GND
86	Vcc	3.3V	IN		Power source
87	SYSAD17	SYSAD17	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
88	SYSAD49	SYSAD49	IN/OUT	ASIC (KZ4H167V06), 74LVC244	System address data bus
89	INT0	INTR0_	IN	ASIC(KZ4H167V06)	ASIC interruption 0
90	SYSAD18	SYSAD18	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
91	Vss	GND	IN		GND
92	Vcc	3.3V	IN		Power source
93	SYSAD50	SYSAD50	IN/OUT	ASIC (KZ4H167V06), 74LVC244	System address data bus
94	VALID IN	VALIN_	IN	ASIC (KZ4H167V06)	VALID INPUT (from ASIC)
95	SYSAD19	SYSAD19	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
96	SYSAD51	SYSAD51	IN/OUT	ASIC (KZ4H167V06), 74LVC244	System address data bus
97	Vss	GND	IN		GND
98	Vcc	3.3V	IN		Power source
99	VALID OUT	VALOUT_	OUT	ASIC (KZ4H167V06)	VALID OUTPUT(to ASIC)
100	SYSAD20	SYSAD20	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
101	N.C	N.C			N.C
102	N.C	N.C			N.C
103	N.C	N.C			N.C
104	N.C	N.C			N.C
105	N.C	N.C			N.C
106	N.C	N.C			N.C
107	N.C	N.C			N.C
108	N.C	N.C			N.C
109	N.C	N.C			N.C
110	N.C	N.C			N.C
111	N.C	N.C			N.C
112	N.C	N.C			N.C
113	N.C	N.C			N.C
114	SYSAD52	SYSAD52	IN/OUT	ASIC (KZ4H167V06), 74LVC244	System address data bus
115	EXT RQST	EXTRQ_	IN	ASIC(KZ4H167V06)	External request
116	Vcc	3.3V	IN		Power source
117	Vss	GND	IN		GND
118	SYSAD21	SYSAD21	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
119	SYSAD53	SYSAD53	IN/OUT	ASIC (KZ4H167V06), 74LVC244	System address data bus
120	RDRDY	READY_	IN	ASIC(KZ4H167V06)	External IC read ready
121	MODEIN	MODEIN	IN	ASIC(KZ3H008302)	Boot mode data input
122	SYSAD22	SYSAD22	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
123	SYSAD54	SYSAD54	IN/OUT	ASIC (KZ4H167V06)	System address data bus
124	Vcc	3.3V	IN		Power source
125	Vss	GND	IN		GND
126	RELEASE	RLS_	OUT	ASIC(KZ4H167V06)	Interface open state

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
127	SYSAD23	SYSAD23	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
128	SYSAD55	SYSAD55	IN/OUT	ASIC (KZ4H167V06)	System address data bus
129	NMI	NMI_	IN	ASIC(KZ4H167V06)	Non-maskable interruption
130	V _{CC}	3.3V	IN		Power source
131	V _{SS}	GND	IN		GND
132	SYSADC2	3.3V	IN		Power source
133	SYSADC6	3.3V	IN		Power source
134	SYSAD24	SYSAD24	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
135	V _{CC}	3.3V	IN		Power source
136	V _{SS}	GND	IN		GND
137	SYSAD56	SYSAD56	IN/OUT	ASIC (KZ4H167V06)	System address data bus
138	SYSAD25	SYSAD25	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
139	SYSAD57	SYSAD57	IN/OUT	ASIC (KZ4H167V06)	System address data bus
140	V _{CC}	3.3V	IN		Power source
141	V _{SS}	GND	IN		GND
142	N.C	N.C			N.C
143	SYSAD26	SYSAD26	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
144	SYSAD58	SYSAD58	IN/OUT	ASIC (KZ4H167V06)	System address data bus
145	N.C	N.C			N.C
146	V _{CC}	3.3V	IN		Power source
147	V _{SS}	GND	IN		GND
148	SYSAD27	SYSAD27	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
149	N.C	N.C			N.C
150	N.C	N.C			N.C
151	N.C	N.C			N.C
152	N.C	N.C			N.C
153	N.C	N.C			N.C
154	N.C	N.C			N.C
155	N.C	N.C			N.C
156	N.C	N.C			N.C
157	N.C	N.C			N.C
158	N.C	N.C			N.C
159	SYSAD59	SYSAD59	IN/OUT	ASIC (KZ4H167V06)	System address data bus
160	COLD RESET	COLDRES_	IN	ASIC(KZ4H167V06)	Clod reset
161	SYSAD28	SYSAD28	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
162	V _{CC}	3.3V	IN		Power source
163	V _{SS}	GND	IN		GND
164	SYSAD60	SYSAD60	IN/OUT	ASIC (KZ4H167V06)	System address data bus
165	RESET	CPURES_	IN	ASIC(KZ4H167V06)	CPU reset
166	SYSAD29	SYSAD29	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
167	SYSAD61	SYSAD61	IN/OUT	ASIC (KZ4H167V06)	System address data bus

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
168	SYSAD30	SYSAD30	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
169	V _{CC}	3.3V	IN		Power source
170	V _{SS}	GND	IN		GND
171	SYSAD62	SYSAD62	IN/OUT	ASIC (KZ4H167V06)	System address data bus
172	SYSAD31	SYSAD31	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH	System address data bus
173	SYSAD63	SYSAD63	IN/OUT	ASIC (KZ4H167V06)	System address data bus
174	V _{CC}	3.3V	IN		Power source
175	V _{SS}	GND	IN		GND
176	V _{CC} OK	VCCOK	IN	ASIC (KZ4H167V06), ASIC(KZ3H008302)	V _{CC} states effective
177	SYSADC3		IN		NC (3.3V pull up)
178	SYSADC7		IN		NC (3.3V pull up)
179	N.C	N.C			N.C
180	N.C	N.C			N.C
181	N.C	N.C			N.C
182	N.C	N.C			N.C
183	N.C	N.C			N.C
184	N.C	N.C			N.C
185	V _{CC} P	3.3V	IN		Power source
186	V _{SS} P	GND	IN		GND
187	MASTER CLOCK	MASTERCLK	IN	ASIC(KZ4H167V06), PLL IC(CY2292)	Master clock
188	V _{CC}	3.3V	IN		Power source
189	V _{SS}	GND	IN		GND
190	SYSADC5			IN	NC (3.3V pull up)
191	SYSADC1			IN	NC (3.3V pull up)
192	V _{CC}		3.3V	IN	Power source
193	V _{SS}	GND	IN		GND
194	SYSAD47	SYSAD47	IN/OUT	ASIC (KZ4H167V06), 74LVC16244	System address data bus
195	SYSAD15	SYSAD15	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
196	SYSAD46	SYSAD46	IN/OUT	ASIC (KZ4H167V06), 74LVC16244	System address data bus
197	V _{CC}	3.3V	IN		Power source
198	V _{SS}	GND	IN		GND
199	SYSAD14	SYSAD14	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
200	SYSAD45	SYSAD45	IN/OUT	ASIC (KZ4H167V06), 74LVC16244	System address data bus
201	SYSAD13	SYSAD13	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
202	SYSAD44	SYSAD44	IN/OUT	ASIC (KZ4H167V06), 74LVC16244	System address data bus
203	V _{SS}	GND	IN		GND
204	V _{CC}	3.3V	IN		Power source
205	SYSAD12	SYSAD12	IN/OUT	ASIC(KZ4H167V06), 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
206	SYSCMDP		IN		NC (3.3V pull up)
207	SYSAD43	SYSAD43	IN/OUT	ASIC(KZ4H167V06), 74LVC16244	System address data bus
208	N.C	N.C			N.C

ChipsetASIC (VHIKZ4H167V06) I/O pin arrangement list (PCL Model)

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
1	V _{CC}	3.3V	IN		Power source
2	SYSAD16	SYSAD16	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
3	SYSAD17	SYSAD17	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
4	SYSAD18	SYSAD18	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
5	SYSAD19	SYSAD19	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
6	SYSAD20	SYSAD20	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
7	SYSAD21	SYSAD21	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
8	SYSAD22	SYSAD22	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
9	V _{CC}	3.3V	IN		Power source
10	GND	GND	IN		GND
11	SYSAD23	SYSAD23	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
12	SYSAD24	SYSAD24	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
13	SYSAD25	SYSAD25	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
14	SYSAD26	SYSAD26	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
15	SYSAD27	SYSAD27	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
16	SYSAD28	SYSAD28	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
17	SYSAD29	SYSAD29	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
18	V _{CC}	3.3V	IN		Power source
19	GND	GND	IN		GND
20	SYSAD30	SYSAD30	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
21	SYSAD31	SYSAD31	IN/OUT	CPU, 16M FLASH, 8M FLASH	System address data bus
22	SYSAD32	SYSAD32	IN/OUT	CPU	System address data bus
23	SYSAD33	SYSAD33	IN/OUT	CPU, 74LVC16244	System address data bus
24	SYSAD34	SYSAD34	IN/OUT	CPU, 74LVC16244	System address data bus
25	SYSAD35	SYSAD35	IN/OUT	CPU, 74LVC16244	System address data bus
26	SYSAD36	SYSAD36	IN/OUT	CPU, 74LVC16244	System address data bus
27	V _{CC}	3.3V	IN		Power source
28	GND	GND	IN		GND
29	SYSAD37	SYSAD37	IN/OUT	CPU, 74LVC16244	System address data bus
30	SYSAD38	SYSAD38	IN/OUT	CPU, 74LVC16244	System address data bus
31	SYSAD39	SYSAD39	IN/OUT	CPU, 74LVC16244	System address data bus
32	SYSAD40	SYSAD40	IN/OUT	CPU, 74LVC16244	System address data bus
33	SYSAD41	SYSAD41	IN/OUT	CPU, 74LVC16244	System address data bus
34	SYSAD42	SYSAD42	IN/OUT	CPU, 74LVC16244	System address data bus
35	SYSAD43	SYSAD43	IN/OUT	CPU, 74LVC16244	System address data bus
36	GND	GND	IN		GND
37	GND	GND	IN		GND
38	GND	GND	IN		GND
39	V _{CC}	3.3V	IN		Power source
40	SYSAD44	SYSAD44	IN/OUT	CPU, 74LVC16244	System address data bus
41	SYSAD45	SYSAD45	IN/OUT	CPU, 74LVC16244	System address data bus
42	SYSAD46	SYSAD46	IN/OUT	CPU, 74LVC16244	System address data bus
43	SYSAD47	SYSAD47	IN/OUT	CPU, 74LVC16244	System address data bus
44	SYSAD48	SYSAD48	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16244	System address data bus
45	SYSAD49	SYSAD49	IN/OUT	CPU, 74LVC244	System address data bus
46	SYSAD50	SYSAD50	IN/OUT	CPU, 74LVC244	System address data bus

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
47	SYSAD51	SYSAD51	IN/OUT	CPU, 74LVC244	System address data bus
48	Vcc	3.3V	IN		Power source
49	GND	GND	IN		GND
50	SYSAD52	SYSAD52	IN/OUT	CPU, 74LVC244	System address data bus
51	SYSAD53	SYSAD53	IN/OUT	CPU, 74LVC244	System address data bus
52	SYSAD54	SYSAD54	IN/OUT	CPU	System address data bus
53	SYSAD55	SYSAD55	IN/OUT	CPU	System address data bus
54	SYSAD56	SYSAD56	IN/OUT	CPU	System address data bus
55	SYSAD57	SYSAD57	IN/OUT	CPU	System address data bus
56	SYSAD58	SYSAD58	IN/OUT	CPU	System address data bus
57	SYSAD59	SYSAD59	IN/OUT	CPU	System address data bus
58	Vcc	3.3V	IN		Power source
59	GND	GND	IN		GND
60	SYSAD60	SYSAD60	IN/OUT	CPU	System address data bus
61	SYSAD61	SYSAD61	IN/OUT	CPU	System address data bus
62	SYSAD62	SYSAD62	IN/OUT	CPU	System address data bus
63	SYSAD63	SYSAD63	IN/OUT	CPU	System address data bus
64	Vcc	3.3V	IN		Power source
65	GND	GND	IN		GND
66	MASTERCLK	MASTERCLK	IN	PLL IC(CY2292)	Master clock
67	TESTMODE		IN		Test pin (3.3V)
68	DC2_TEST		IN		Test pin (GND)
69	SCAN_TEST		IN		Test pin (GND)
70	SCAN_EN		IN		Scan enable (GND)
71	PLL_EN	RESET_	IN	74LS244	PLL enable
72	PLL_TEST		IN		Test pin (GND)
73	GND	GND	IN		GND
74	Vcc	3.3V	IN		Power source
75	Vcc	3.3V	IN		Power source
76	CPOUT		OUT		Charge pump output
77	PLLGND	GND	IN		PLL GND
78	PLLVDD	3.3V	IN		PLL power
79	VCOIN		IN		Loop filter input
80	GND	GND	IN		GND
81	SYSCMD8	SYSCMD8	IN/OUT	CPU	System command data bus
82	SYSCMD7	SYSCMD7	IN/OUT	CPU	System command data bus
83	SYSCMD6	SYSCMD6	IN/OUT	CPU	System command data bus
84	SYSCMD5	SYSCMD5	IN/OUT	CPU	System command data bus
85	SYSCMD4	SYSCMD4	IN/OUT	CPU	System command data bus
86	SYSCMD3	SYSCMD3	IN/OUT	CPU	System command data bus
87	SYSCMD2	SYSCMD2	IN/OUT	CPU	System command data bus
88	SYSCMD1	SYSCMD1	IN/OUT	CPU	System command data bus
89	Vcc	3.3V	IN		Power source
90	GND	GND	IN		GND
91	SYSCMD0	SYSCMD0	IN/OUT	CPU	System command data bus
92	/DACK3	N.C			NC
93	/DACK2	N.C			NC

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
94	/DACK1	N.C			NC
95	/DACK0	PARACK_	OUT	ASIC(KZ3H008302)	ACK_ signal to interface ASIC
96	/CPURST	CPURST_	OUT	CPU	CPU reset signal
97	/CRST	COLDRES_	OUT	CPU	Cold reset signal
98	VCCOK	VCCOK	OUT	CPU, ASIC(KZ3H008302)	Vcc states effective
99	V _{CC}	3.3V	IN		Power source
100	GND	GND	IN		GND
101	/NMI	NMI_	OUT	CPU	Non-maskable interruption output
102	/INTR2	INTR2_	OUT	CPU	Interruption output 2
103	/INTR1	INTR1_	OUT	CPU	Interruption output 1
104	/INTR0	INTR0_	OUT	CPU	Interruption output 0
105	/EXREQ	EXREQ_	OUT	CPU	Bus open request
106	/READY	READY_	OUT	CPU	Command reception ready from CPU
107	/VALIN	VALIN_	OUT	CPU	VALID INPUT(to CPU)
108	/PIARD	PIARD_	OUT	74LVC16245, ASIC(KZ3H008302)	External peripheral Read Enable
109	V _{CC}	3.3V	IN		Power source
110	GND	GND	IN		GND
111	GND	GND	IN		GND
112	GND	GND	IN		GND
113	SCLK	SCLK	IN	PLL IC(CY2292)	Serial clock
114	/DREQ3		IN		NC (3.3V pull up)
115	/DREQ2		IN		NC (3.3V pull up)
116	/DREQ1		IN		NC (3.3V pull up)
117	/DREQ0	PARREQ_	IN	ASIC(KZ3H008302)	DREQ_ signal from interface ASIC
118	/POR	RESET_	IN	74LS244	Power on reset
119	/RLS	RLS_	IN	CPU	Bus open recognition
120	/VALOUT	VALOUT_	IN	CPU	VALID OUTPUT(from CPU)
121	/WAIT		IN		GND
122	/PIAWE	PIAWE_	OUT	ASIC(KZ3H008302)	External peripheral Write Enable
123	/PIACS5				NC
124	/PIACS4				NC
125	/PIACS3				NC
126	/PIACS2				NC
127	V _{CC}	3.3V	IN		Power source
128	GND	GND	IN		GND
129	/PIACS1				NC
130	/PIACS0	LDTOE_ , 1284CS_	OUT	74LVC16245, ASIC(KZ3H008302)	Interface ASIC chip select
131	/ROMCS3	RCS3_	OUT		NC
132	/ROMCS2	RCS2_			NC
133	/ROMCS1	RCS1_	OUT	LH28F800SUT	Boot ROM chip select
134	/ROMCS0	RCS0_	OUT	LH28F016SUT	Code ROM chip select
135	/MWE	MWE_	OUT	74LVC16244	DRAM write enable
136	/MOE	MOE_	OUT	74LVC16244	DRAM output enable
137	V _{CC}	3.3V	IN		Power source
138	GND	GND	IN		GND
139	/CAS7	CAS7_	OUT	16M Flash, DIMM168	DRAM CAS_ signal

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
140	/CAS6	CAS6_	OUT	16M Flash, DIMM168	DRAM CAS_ signal
141	/CAS5	CAS5_	OUT	16M Flash, DIMM168	DRAM CAS_ signal
142	/CAS4	CAS4_	OUT	16M Flash, DIMM168	DRAM CAS_ signal
143	/CAS3	CAS3_	OUT	16M Flash, DIMM168	DRAM CAS_ signal
144	/CAS2	CAS2_	OUT	16M Flash, DIMM168	DRAM CAS_ signal
145	/CAS1	CAS1_	OUT	16M Flash, DIMM168	DRAM CAS_ signal
146	/CAS0	CAS0_	OUT	16M Flash, DIMM168	DRAM CAS_ signal
147	GND	GND	IN		GND
148	V _{CC}	3.3V	IN		Power source
149	V _{CC}	3.3V	IN		Power source
150	/RAS3	RAS3_	OUT		NC
151	/RAS2	RAS2_	OUT	74LVC16244	DRAM RAS_ signal
152	/RAS1	RAS1_	OUT	74LVC16244	DRAM RAS_ signal
153	/RAS0	RAS0_	OUT	16M Flash	DRAM RAS_ signal
154	MD63	MD63	IN/OUT	16M Flash, DIMM168	DRAM data signal
155	MD31	MD31	IN/OUT	16M Flash, DIMM168	DRAM data signal
156	MD62	MD62	IN/OUT	16M Flash, DIMM168	DRAM data signal
157	MD30	MD30	IN/OUT	16M Flash, DIMM168	DRAM data signal
158	V _{CC}	3.3V	IN		Power source
159	GND	GND	IN		GND
160	MD61	MD61	IN/OUT	16M Flash, DIMM168	DRAM data signal
161	MD29	MD29	IN/OUT	16M Flash, DIMM168	DRAM data signal
162	MD60	MD60	IN/OUT	16M Flash, DIMM168	DRAM data signal
163	MD28	MD28	IN/OUT	16M Flash, DIMM168	DRAM data signal
164	MD59	MD59	IN/OUT	16M Flash, DIMM168	DRAM data signal
165	MD27	MD27	IN/OUT	16M Flash, DIMM168	DRAM data signal
166	MD58	MD58	IN/OUT	16M Flash, DIMM168	DRAM data signal
167	V _{CC}	3.3V	IN		Power source
168	GND	GND	IN		GND
169	MD26	MD26	IN/OUT	16M Flash, DIMM168	DRAM data signal
170	MD57	MD57	IN/OUT	16M Flash, DIMM168	DRAM data signal
171	MD25	MD25	IN/OUT	16M Flash, DIMM168	DRAM data signal
172	MD56	MD56	IN/OUT	16M Flash, DIMM168	DRAM data signal
173	MD24	MD24	IN/OUT	16M Flash, DIMM168	DRAM data signal
174	MD55	MD55	IN/OUT	16M Flash, DIMM168	DRAM data signal
175	MD23	MD23	IN/OUT	16M Flash, DIMM168	DRAM data signal
176	V _{CC}	3.3V	IN		Power source
177	GND	GND	IN		GND
178	MD54	MD54	IN/OUT	16M Flash, DIMM168	DRAM data signal
179	MD22	MD22	IN/OUT	16M Flash, DIMM168	DRAM data signal
180	MD53	MD53	IN/OUT	16M Flash, DIMM168	DRAM data signal
181	MD21	MD21	IN/OUT	16M Flash, DIMM168	DRAM data signal
182	MD52	MD52	IN/OUT	16M Flash, DIMM168	DRAM data signal
183	MD20	MD20	IN/OUT	16M Flash, DIMM168	DRAM data signal
184	GND	GND	IN		GND
185	GND	GND	IN		GND
186	GND	GND	IN		GND

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
187	V _{CC}	3.3V	IN		Power source
188	MD51	MD51	IN/OUT	16M Flash, DIMM168	DRAM data signal
189	MD19	MD19	IN/OUT	16M Flash, DIMM168	DRAM data signal
190	MD50	MD50	IN/OUT	16M Flash, DIMM168	DRAM data signal
191	MD18	MD18	IN/OUT	16M Flash, DIMM168	DRAM data signal
192	MD49	MD49	IN/OUT	16M Flash, DIMM168	DRAM data signal
193	MD17	MD17	IN/OUT	16M Flash, DIMM168	DRAM data signal
194	MD48	MD48	IN/OUT	16M Flash, DIMM168	DRAM data signal
195	V _{CC}	3.3V	IN		Power source
196	GND	GND	IN		GND
197	MD16	MD16	IN/OUT	16M Flash, DIMM168	DRAM data signal
198	MD47	MD47	IN/OUT	16M Flash, DIMM168	DRAM data signal
199	MD15	MD15	IN/OUT	16M Flash, DIMM168	DRAM data signal
200	MD46	MD46	IN/OUT	16M Flash, DIMM168	DRAM data signal
201	MD14	MD14	IN/OUT	16M Flash, DIMM168	DRAM data signal
202	MD45	MD45	IN/OUT	16M Flash, DIMM168	DRAM data signal
203	MD13	MD13	IN/OUT	16M Flash, DIMM168	DRAM data signal
204	V _{CC}	3.3V	IN		Power source
205	GND	GND	IN		GND
206	MD44	MD44	IN/OUT	16M Flash, DIMM168	DRAM data signal
207	MD12	MD12	IN/OUT	16M Flash, DIMM168	DRAM data signal
208	MD43	MD43	IN/OUT	16M Flash, DIMM168	DRAM data signal
209	MD11	MD11	IN/OUT	16M Flash, DIMM168	DRAM data signal
210	MD42	MD42	IN/OUT	16M Flash, DIMM168	DRAM data signal
211	MD10	MD10	IN/OUT	16M Flash, DIMM168	DRAM data signal
212	MD41	MD41	IN/OUT	16M Flash, DIMM168	DRAM data signal
213	V _{CC}	3.3V	IN		Power source
214	GND	GND	IN		GND
215	MD9	MD9	IN/OUT	16M Flash, DIMM168	DRAM data signal
216	MD40	MD40	IN/OUT	16M Flash, DIMM168	DRAM data signal
217	MD8	MD8	IN/OUT	16M Flash, DIMM168	DRAM data signal
218	MD39	MD39	IN/OUT	16M Flash, DIMM168	DRAM data signal
219	MD7	MD7	IN/OUT	16M Flash, DIMM168	DRAM data signal
220	MD38	MD38	IN/OUT	16M Flash, DIMM168	DRAM data signal
221	MD6	MD6	IN/OUT	16M Flash, DIMM168	DRAM data signal
222	V _{CC}	3.3V	IN		Power source
223	V _{CC}	3.3V	IN		Power source
224	GND	GND	IN		GND
225	MD37	MD37	IN/OUT	16M Flash, DIMM168	DRAM data signal
226	MD5	MD5	IN/OUT	16M Flash, DIMM168	DRAM data signal
227	MD36	MD36	IN/OUT	16M Flash, DIMM168	DRAM data signal
228	MD4	MD4	IN/OUT	16M Flash, DIMM168	DRAM data signal
229	MD35	MD35	IN/OUT	16M Flash, DIMM168	DRAM data signal
230	MD3	MD3	IN/OUT	16M Flash, DIMM168	DRAM data signal
231	MD34	MD34	IN/OUT	16M Flash, DIMM168	DRAM data signal
232	V _{CC}	3.3V	IN		Power source
233	GND	GND	IN		GND

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
234	MD2	MD2	IN/OUT	16M Flash, DIMM168	DRAM data signal
235	MD33	MD33	IN/OUT	16M Flash, DIMM168	DRAM data signal
236	MD1	MD1	IN/OUT	16M Flash, DIMM168	DRAM data signal
237	MD32	MD32	IN/OUT	16M Flash, DIMM168	DRAM data signal
238	MD0	MD0	IN/OUT	16M Flash, DIMM168	DRAM data signal
239	MA11	MA11	IN/OUT	74LVC16244	DRAM address signal
240	MA10	MA10	IN/OUT	74LVC16244	DRAM address signal
241	V _{CC}	3.3V	IN		Power source
242	GND	GND	IN		GND
243	MA9	MA9	IN/OUT	74LVC16244	DRAM address signal
244	MA8	MA8	IN/OUT	74LVC16244	DRAM address signal
245	MA7	MA7	IN/OUT	74LVC16244	DRAM address signal
246	MA6	MA6	IN/OUT	74LVC16244	DRAM address signal
247	MA5	MA5	IN/OUT	74LVC16244	DRAM address signal
248	MA4	MA4	IN/OUT	74LVC16244	DRAM address signal
249	MA3	MA3	IN/OUT	74LVC16244	DRAM address signal
250	V _{CC}	3.3V	IN		Power source
251	GND	GND	IN		GND
252	MA2	MA2	IN/OUT	74LVC16244	DRAM address signal
253	MA1	MA1	IN/OUT	74LVC16244	DRAM address signal
254	MA0	MA0	IN/OUT	74LVC16244	DRAM address signal
255	TXD1	CMD	OUT	74LVC244	Serial data output 1
256	TXD2	N.C			NC
257	/SYNCEN	SYNCEN_	OUT	M66236FP	Jitter adjustment circuit control signal
258	GND	GND	IN		GND
259	GND	GND	IN		GND
260	GND	GND	IN		GND
261	V _{CC}	3.3V	IN		Power source
262	VFCLK	VFCLK	IN	M66236FP	Video I/F clock
263	RXD1	STS	IN	74LS244	Serial data input 1
264	RXD2		IN		NC (3.3V pull up)
265	/HSYNC	HSYNC_	IN	74LS244	Print horizontal sync signal
266	/TC				NC
267	/PAGE	PAGE_	OUT	74LVC244	PAGE sync signal
268	/VDATA	VDATA_	OUT	74LVC244	VIDEO data
269	/ROMWE	ROMWE_	OUT	74LVC244	Flash ROM write enable
270	/BUFOE				NC
271	/BUFDIR	BUFDIR	OUT	74LVC244	BUS buffer direction
272	V _{CC}	3.3V	IN		Power source
273	GND	GND	IN		GND
274	SYSAD0	SYSAD0	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
275	SYSAD1	SYSAD1	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
276	SYSAD2	SYSAD2	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
277	SYSAD3	SYSAD3	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
278	SYSAD4	SYSAD4	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
279	SYSAD5	SYSAD5	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
280	SYSAD6	SYSAD6	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
281	V _{CC}	3.3V	IN		Power source
282	GND	GND	IN		GND
283	SYSAD7	SYSAD7	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
284	SYSAD8	SYSAD8	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
285	SYSAD9	SYSAD9	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
286	SYSAD10	SYSAD10	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
287	SYSAD11	SYSAD11	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
288	SYSAD12	SYSAD12	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
289	SYSAD13	SYSAD13	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
290	V _{CC}	3.3V	IN		Power source
291	GND	GND	IN		GND
292	SYSAD14	SYSAD14	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
293	SYSAD15	SYSAD15	IN/OUT	CPU, 16M FLASH, 8M FLASH, 74LVC16245	System address data bus
294	GND	GND	IN		GND
295	GND	GND	IN		GND
296	V _{CC}	3.3V	IN		Power source

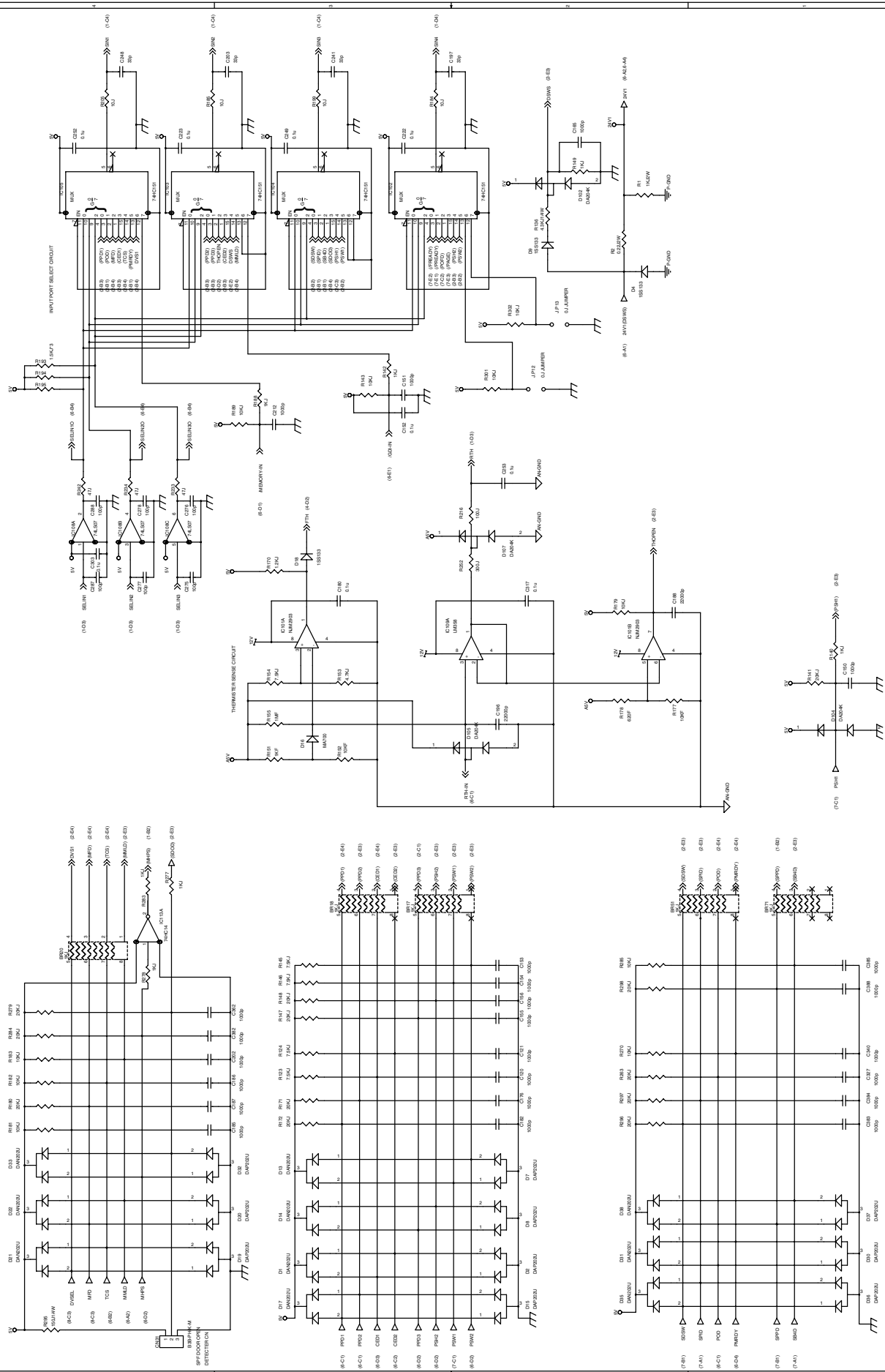
Interface ASIC (VHIKZ3H008302) I/O pin arrangement list (PCL Model)

PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
1	VDD	3.3V	IN		Power source
2	CPUD13	LDT13	IN/OUT	74LVC16245	Data bus
3	CPUD14	LDT14	IN/OUT	74LVC16245	Data bus
4	CPUD15	LDT15	IN/OUT	74LVC16245	Data bus
5	MODECLK	MODECLK	OUT	74LS244	Boot mode clock
6	MODEIN	MODEIN	OUT	CPU	CPU boot mode setup serial data output
7	CPUINTR_1	PARINTR_	OUT	CPU	Print request interruption output
8	DAMMY	1284-EN_ , USB-EN_ , USB-ON	OUT	USS-725, 74LVX244, I/F_CN	IEEE1284/USB selection enable signal
9	EREDY_1	PREADY_	OUT	74LVC244	Print ready signal
10	SRDY_1	SRDY_	OUT	74LVC244	PCL side reception ready signal
11	GND	GND	IN		GND
12	GND	GND	IN		GND
13	AD2	RAD2	IN/OUT	74LVC16244, 8M Flash, 16M Flash	Address bus
14	AD3	RAD3	IN/OUT	74LVC16244, 8M Flash, 16M Flash	Address bus
15	AD4	RAD4	IN/OUT	74LVC16244, 8M Flash, 16M Flash	Address bus
16	AD5	RAD5	IN/OUT	74LVC16244, 8M Flash, 16M Flash	Address bus
17	READY_1	EREDY_	IN	74LS244	MCU side ready signal
18	CRDY_1	CRDY_	IN	74LS244	MCU side reception ready signal
19	PSON_1		IN		NC (3.3V pull up)
20	NETON_1		IN		NC (3.3V pull up)
21	EXON_1	USB-IN	IN	I/F_CN	USB input detection signal
22	SCK	SCK	IN	24C16	EEPROM serial clock
23	SDAOUT	SDAOUT	IN	24C16	EEPROM serial data output
24	SDAIN	SDAIN	IN	24C16	EEPROM serial data input
25	BSEL4		IN		Process speed setup JP (3.3V pull up)
26	BSEL3		IN		Process speed setup JP (GND pull down)
27	BSEL2		IN		Process speed setup JP (GND pull down)
28	BSEL1		IN		Process speed setup JP (GND pull down)
29	BSEL0		IN		Process speed setup JP (3.3V pull up)
30	SLCT	SLCT	OUT	74LCX244, USS-725	Printer selection state
31	FAULT_1	FAULT_	OUT	74LCX244, USS-725	Printer error
32	PE	PE	OUT	74LCX244, USS-725	Paper end
33	BUSY	BUSY	OUT	74LCX244, USS-725	Printer busy state
34	ACK_1	ACK_	OUT	74LCX244, USS-725	ACK status
35	STB_1	STB_	IN	74LCX244	STROBE control signal
36	AUTOFD_1	AUTOFD_	IN	74LCX244	Automatic new-line control signal
37	SLCTIN_1	SLCTIN_	IN	74LCX244	Printer selection
38	INIT_1	INIT_	IN	74LCX244	Printer initializing
39	PARAD7	PARAD7	IN	74LCX245, USS-725	Parallel I/F data bus
40	VDD	3.3V	IN		Power source
41	VDD	3.3V	IN		Power source
42	PARAD6	PARAD6	IN	74LCX245, USS-725	Parallel I/F data bus

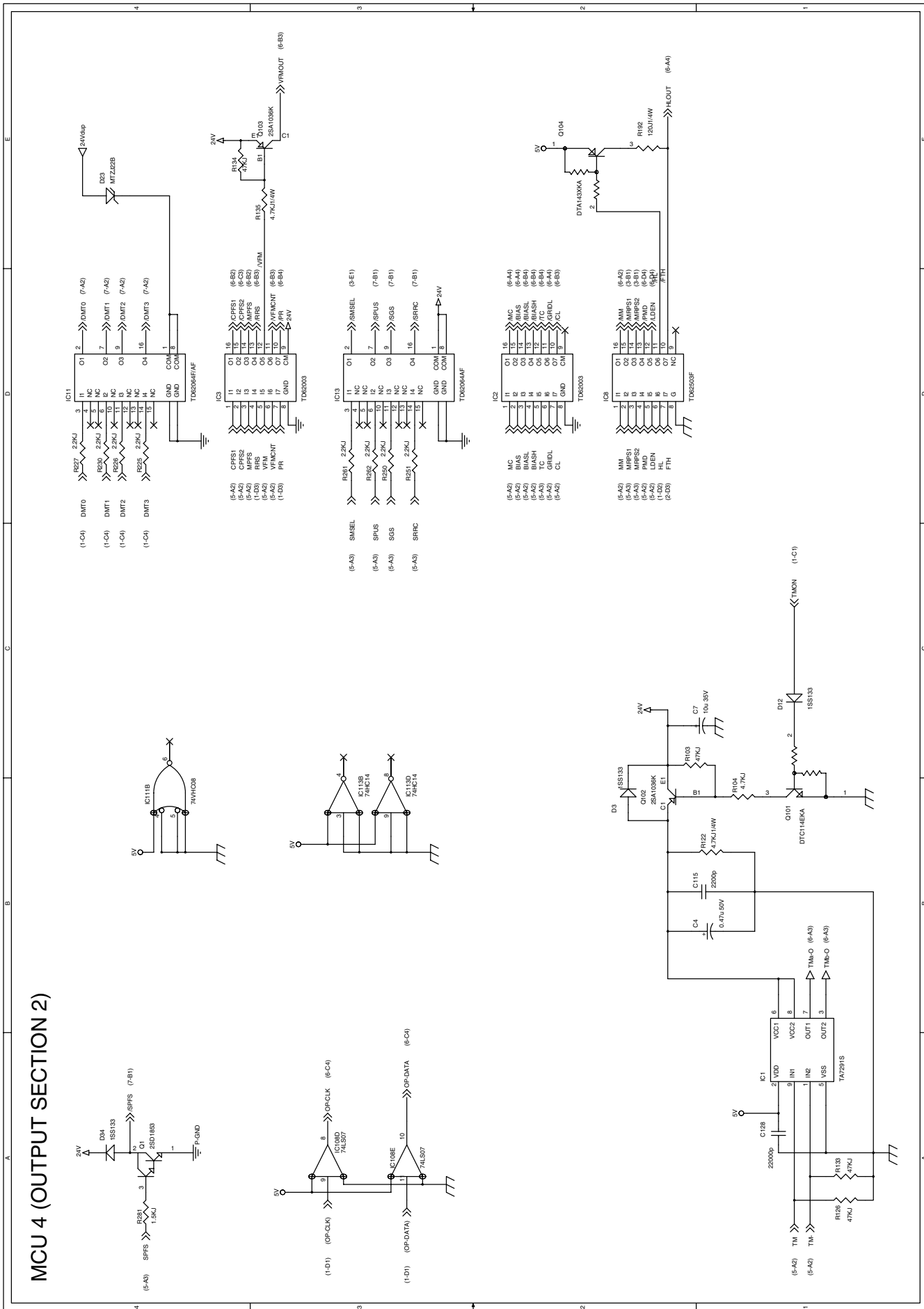
PIN No.	Pin name	Signal name	IN/OUT	Destination	Function
43	PARAD5	PARAD5	IN	74LCX245, USS-725	Parallel I/F data bus
44	GND	GND	IN		GND
45	PARAD4	PARAD4	IN	74LCX245, USS-725	Parallel I/F data bus
46	PARAD3	PARAD3	IN	74LCX245, USS-725	Parallel I/F data bus
47	PARAD2	PARAD2	IN	74LCX245, USS-725	Parallel I/F data bus
48	V _{DD}	3.3V	IN		Power source
49	PARAD1	PARAD1	IN	74LCX245, USS-725	Parallel I/F data bus
50	PARAD0	PARAD0	IN	74LCX245, USS-725	Parallel I/F data bus
51	GND	GND	IN		GND
52	GND	GND	IN		GND
53	REV_1	REV_	OUT	74LCX245, I/F_CN	Data direction control
54	SCAN_EN	GND	IN		GND
55	SCAN_TEST	GND	IN		GND
56	PBACK_1	PARACK_	IN	ASIC(KZ4H167V06)	DMA acknowledge signal from ChipsetASIC
57	PDREQ_1	PARREQ_	OUT	ASIC(KZ4H167V06)	DMA request signal to ChipsetASIC
58	SCLK	GA2CLK	IN	PLL IC (CY2292)	Clock
59	DEVCS_1	1284CS_	IN	ASIC(KZ4H167V06)	OS_ signal to interface ASIC
60	DEVWR_1	PIAWE_	IN	ASIC(KZ4H167V06)	Write signal to interface ASIC
61	DEVRD_1	PIARD_	IN	ASIC(KZ4H167V06), 74LVC16245	Read signal to interface ASIC
62	RES_1	RESET_	IN	CPU	Reset signal
63	VCCOK	VCCOK	IN	ASIC(KZ4H167V06)	V _{CC} states effective
64	CPUD0	LDT0	IN/OUT	74LVC16245	Data bus
65	CPUD1	LDT1	IN/OUT	74LVC16245	Data bus
66	CPUD2	LDT2	IN/OUT	74LVC16245	Data bus
67	CPUD3	LDT3	IN/OUT	74LVC16245	Data bus
68	CPUD4	LDT4	IN/OUT	74LVC16245	Data bus
69	GND	GND	IN		GND
70	CPUD5	LDT5	IN/OUT	74LVC16245	Data bus
71	CPUD6	LDT6	IN/OUT	74LVC16245	Data bus
72	V _{DD}	3.3V	IN		Power source
73	CPUD7	LDT7	IN/OUT	74LVC16245	Data bus
74	CPUD8	LDT8	IN/OUT	74LVC16245	Data bus
75	CPUD9	LDT9	IN/OUT	74LVC16245	Data bus
76	GND	GND	IN		GND
77	CPUD10	LDT10	IN/OUT	74LVC16245	Data bus
78	CPUD11	LDT11	IN/OUT	74LVC16245	Data bus
79	CPUD12	LDT12	IN/OUT	74LVC16245	Data bus
80	V _{DD}	3.3V	IN		Power source



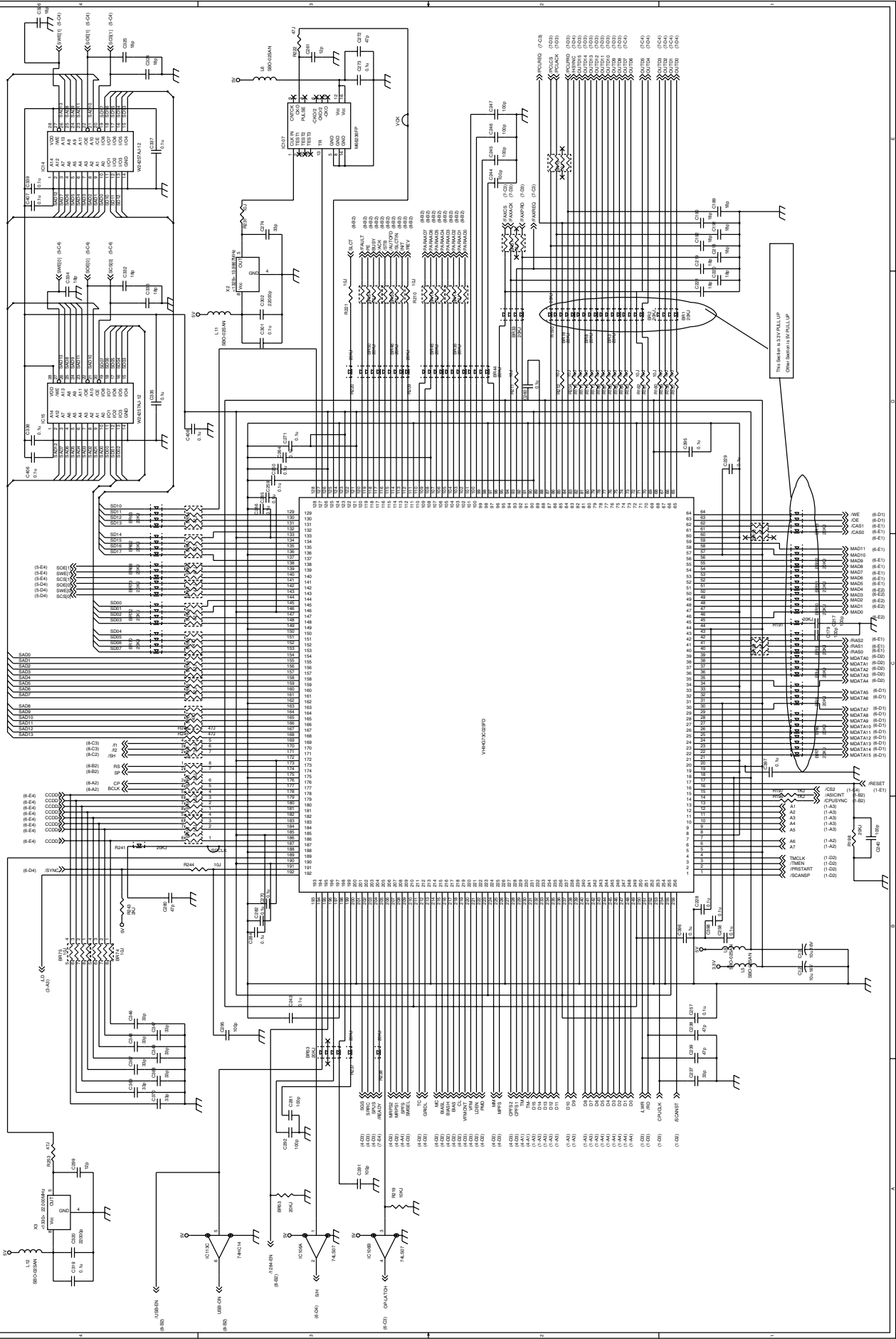
MCU 2 (INPUT SECTION)





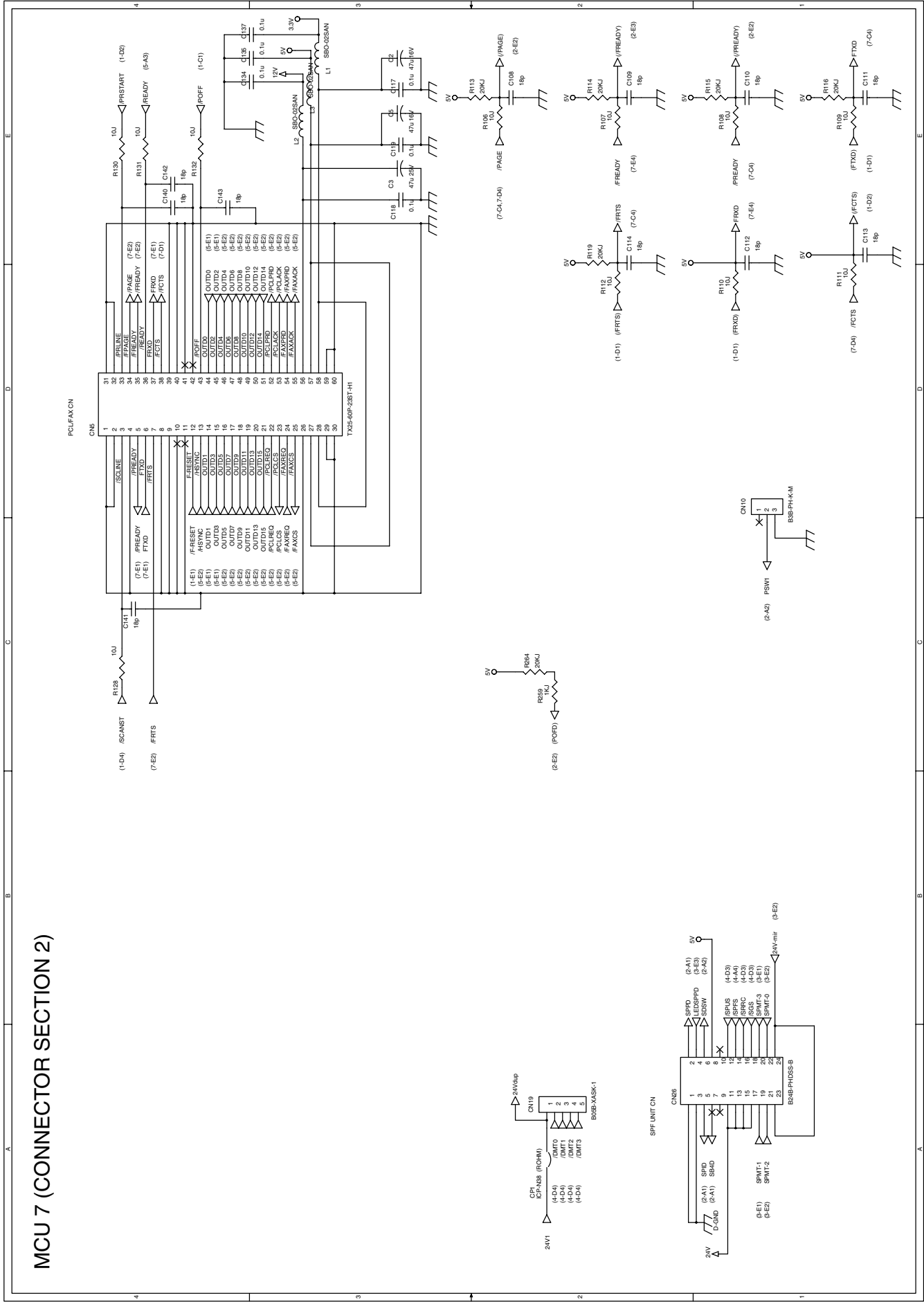


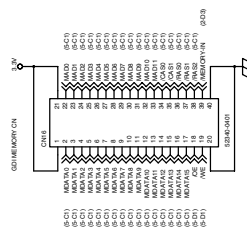
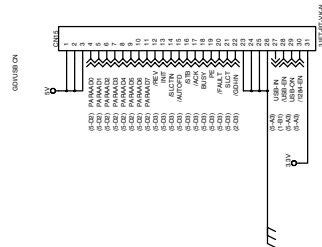
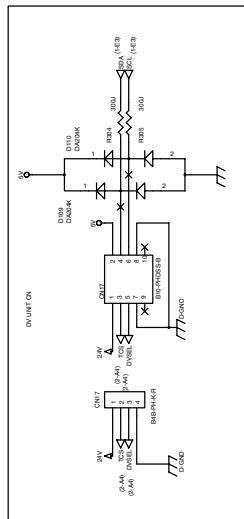
MCU 5 (ASIC SECTION)

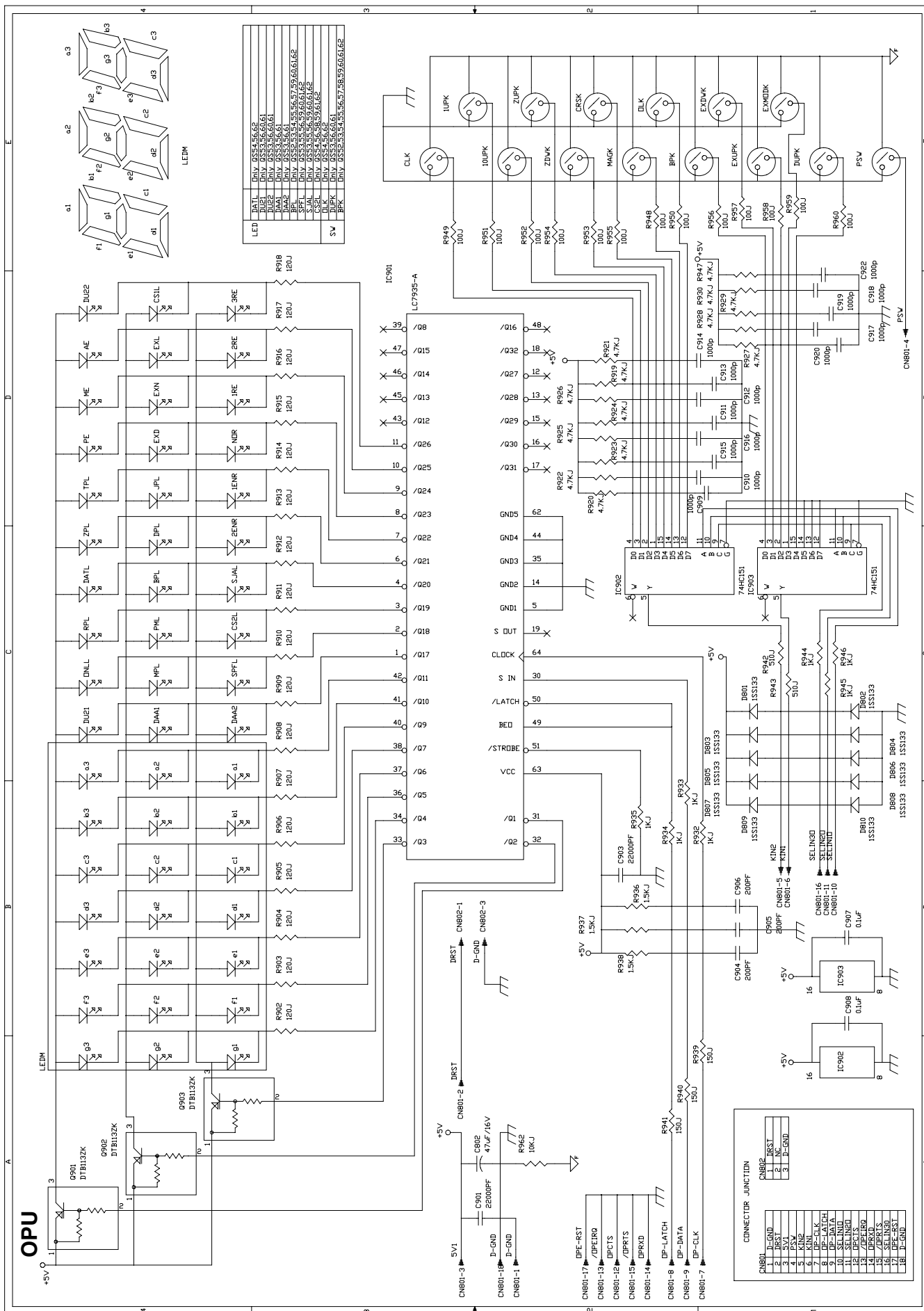


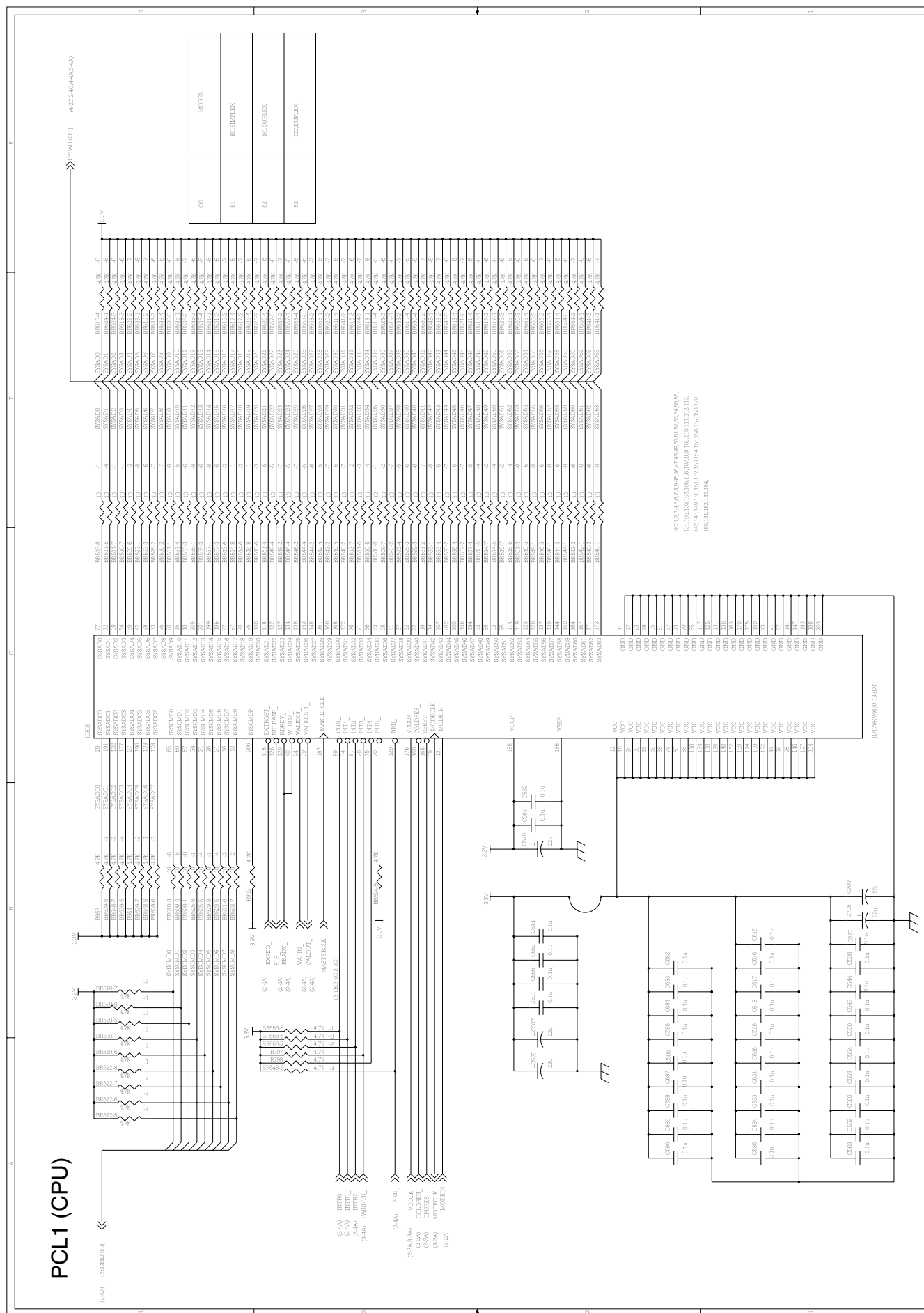


MCU 7 (CONNECTOR SECTION 2)



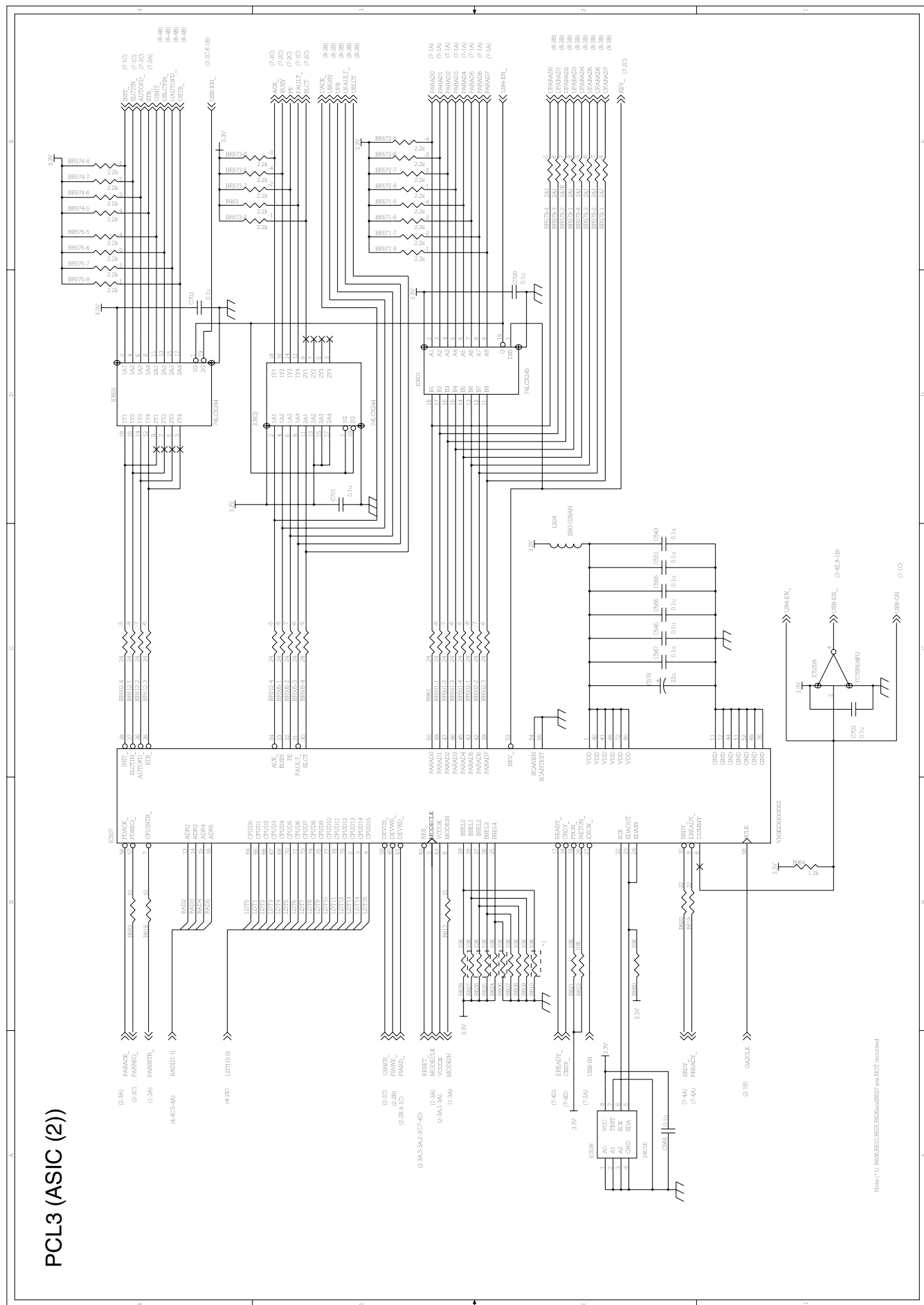




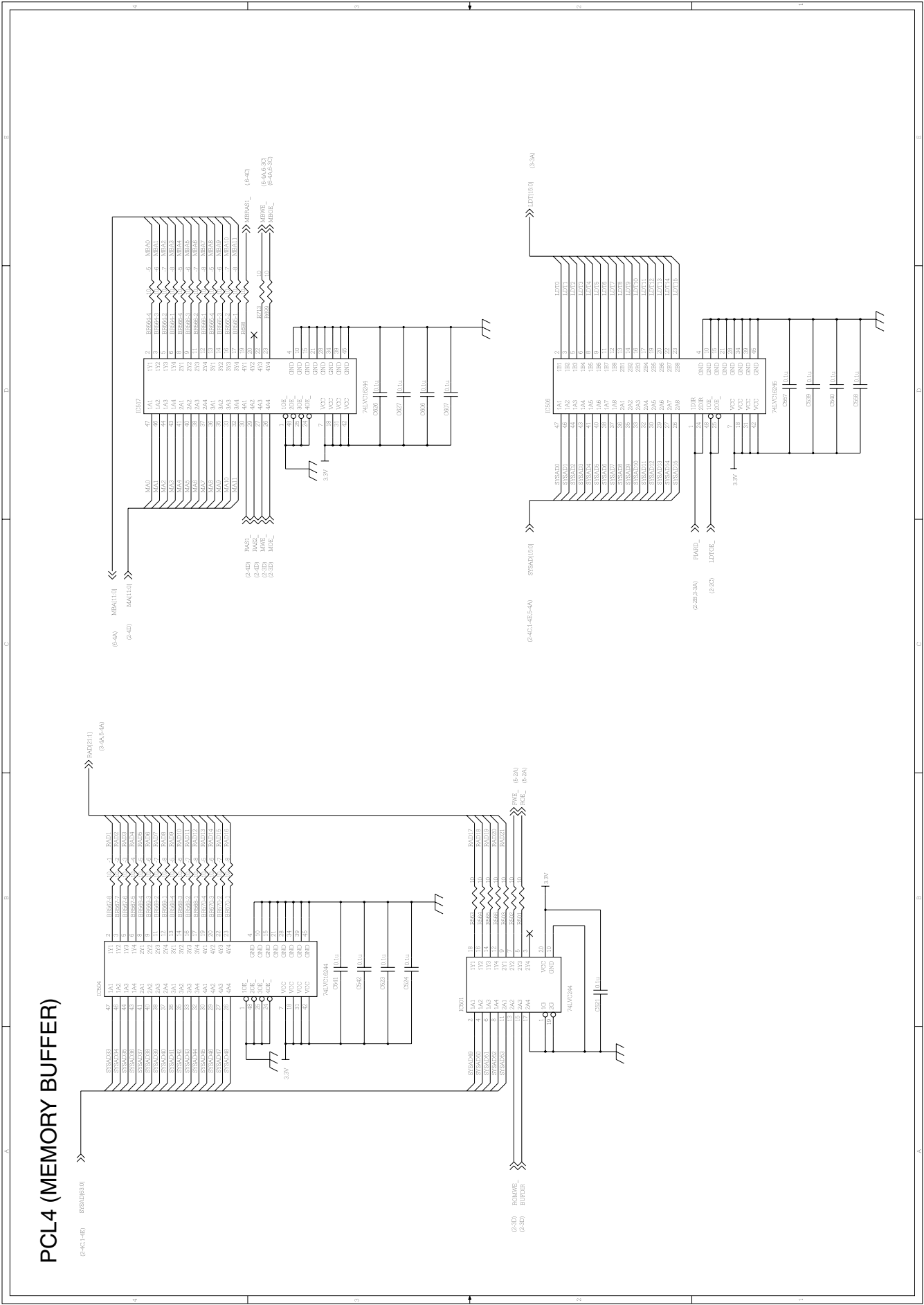




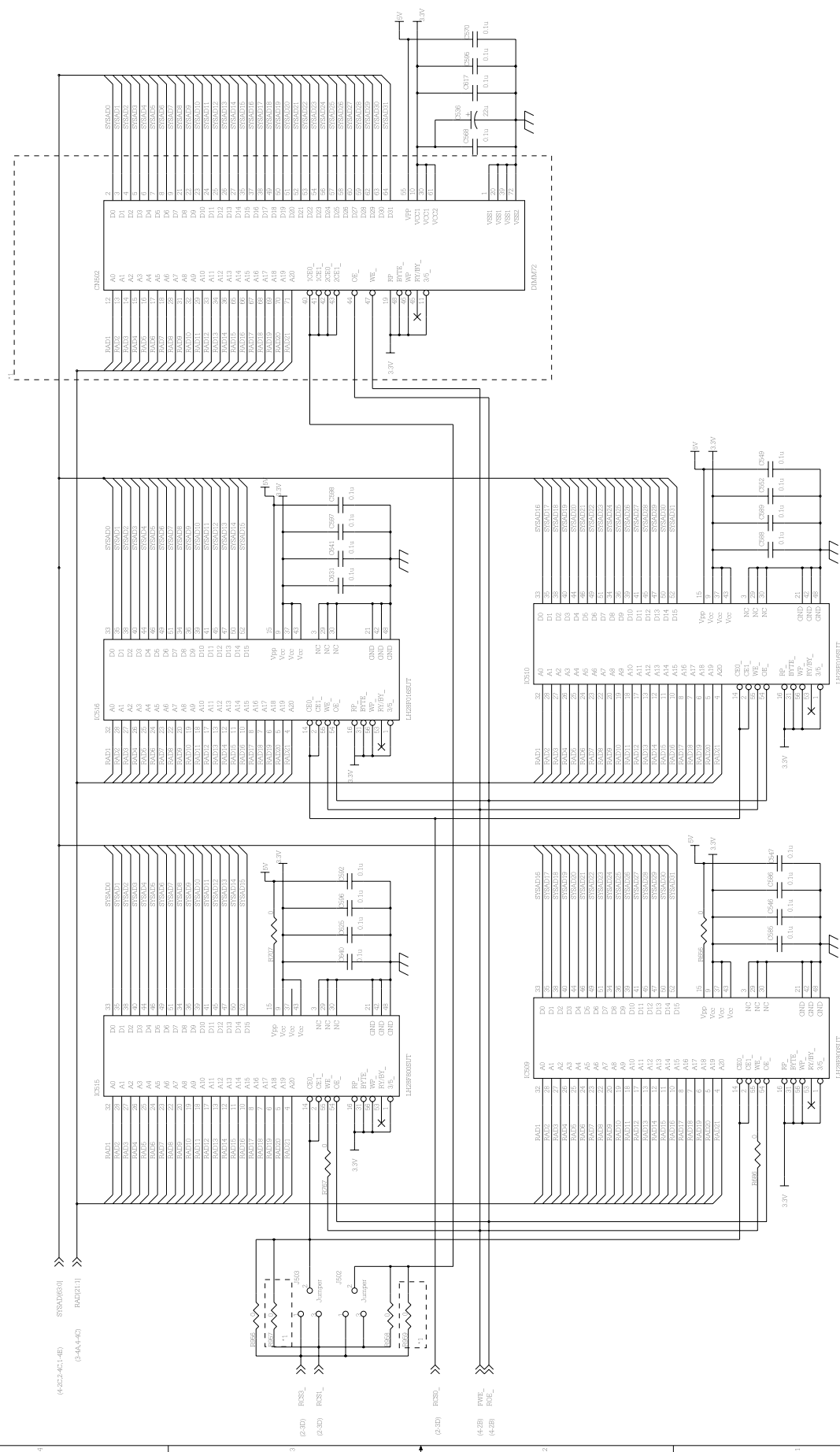
PCL3 (ASIC (2))



Note (*1): P806, R610, R825, R628 and R827 are NOT mounted



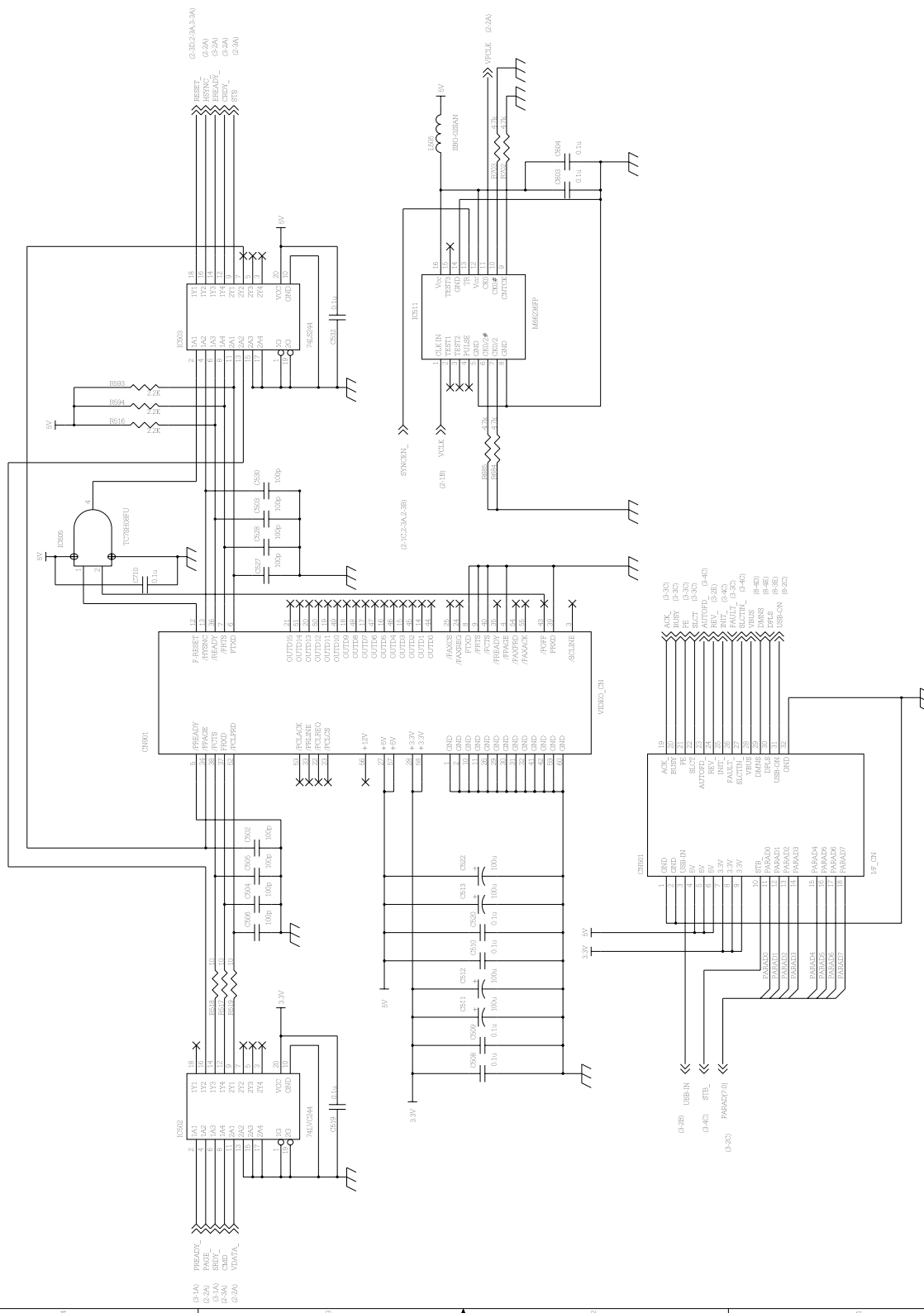
PCL5 (ROM)

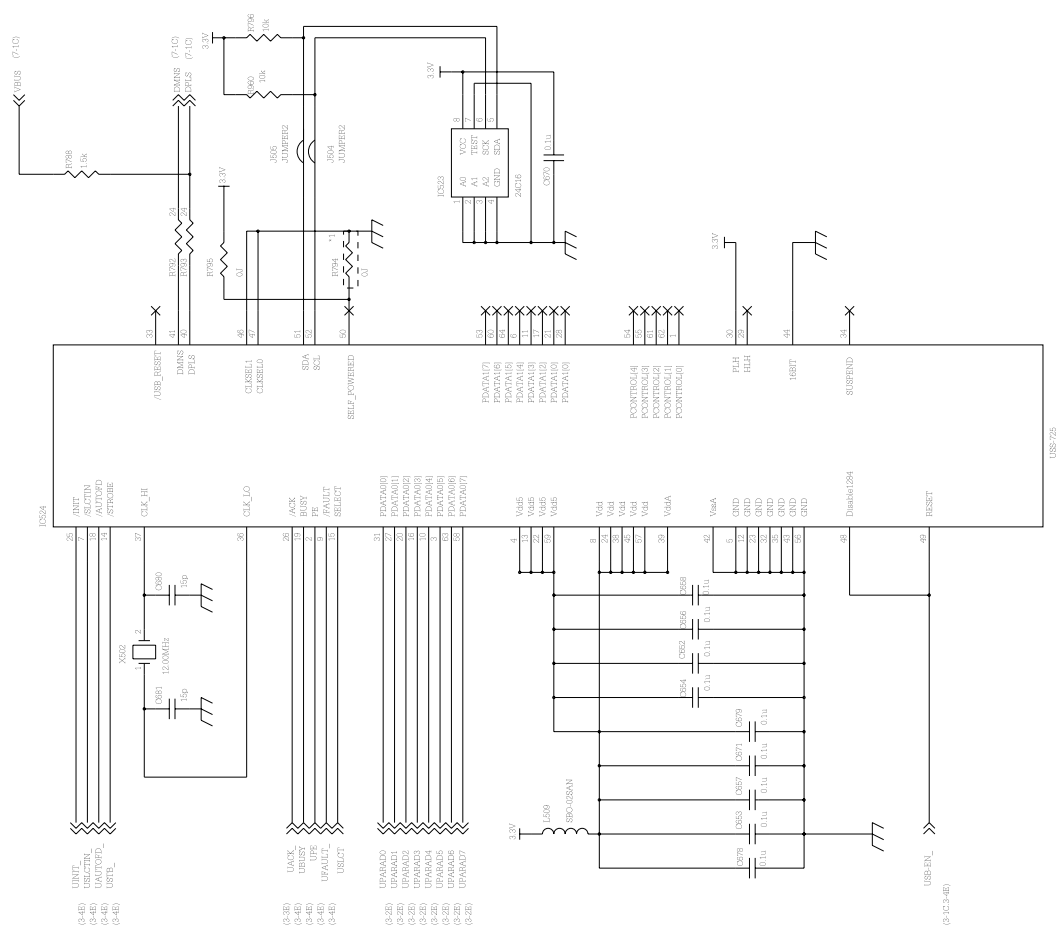


*1: 25A15, 25A16 and 25A18 are not included



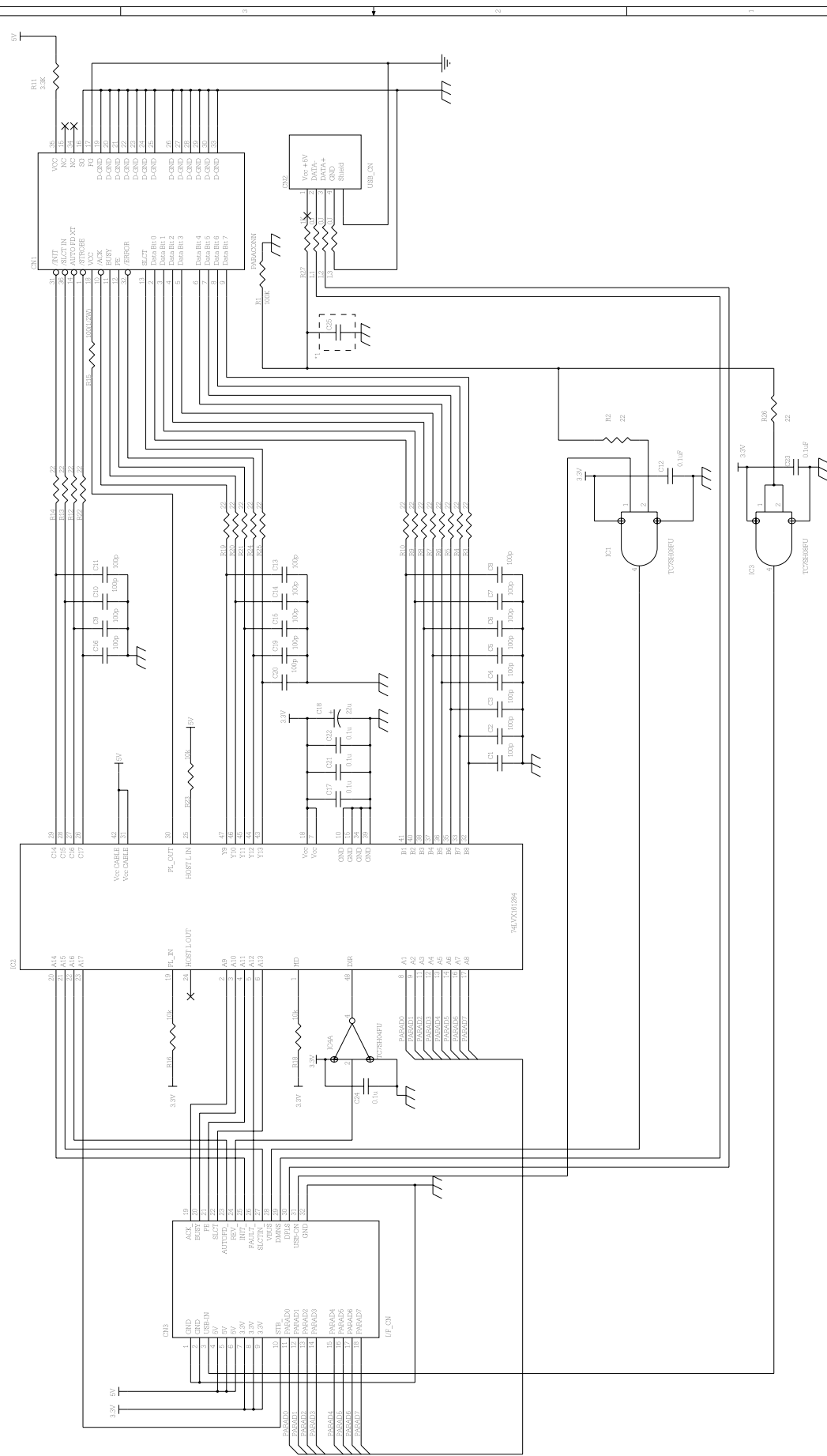
PCL7 (CONNECTOR)



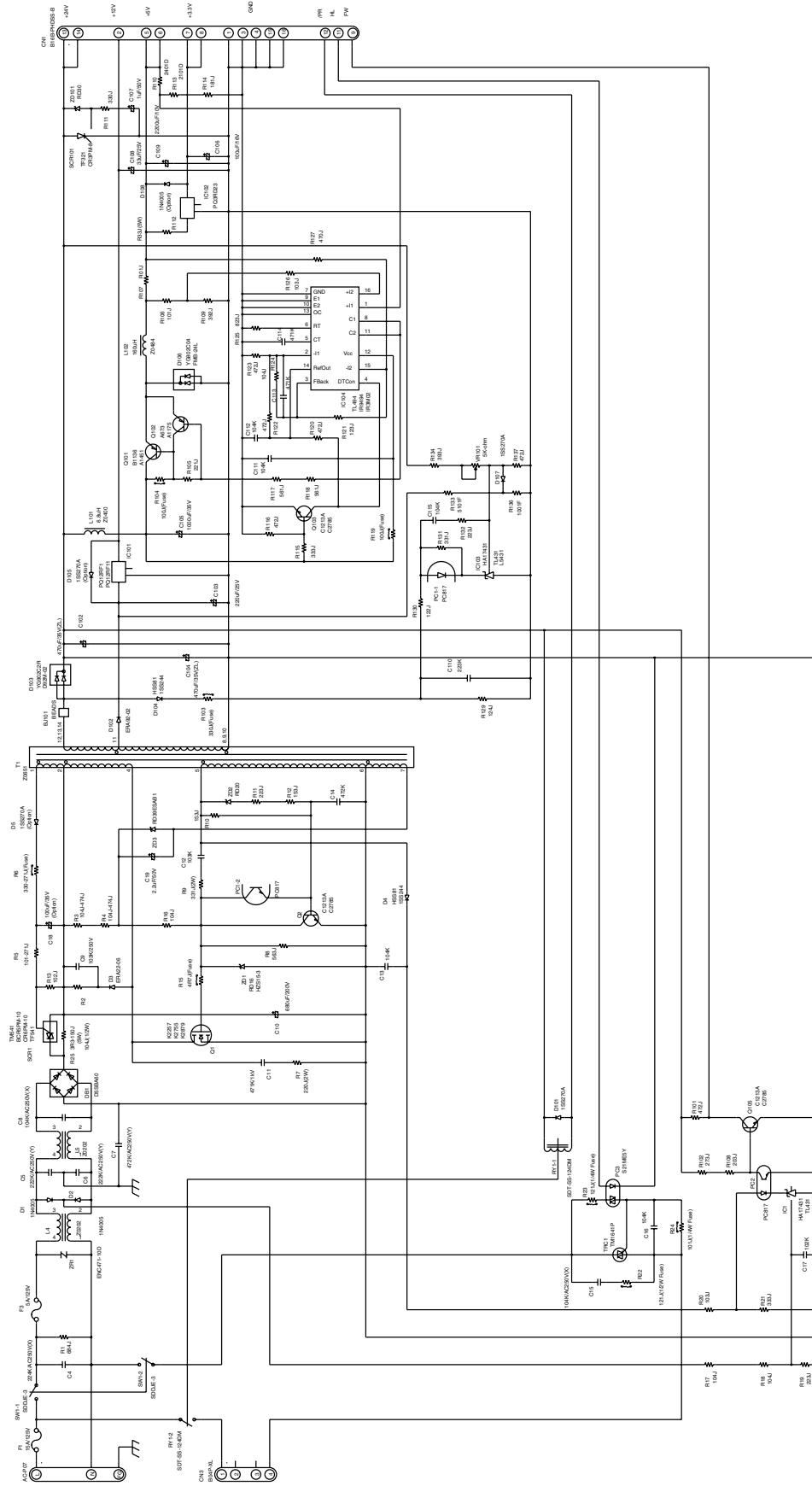


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PCL9 (PCL I/F)

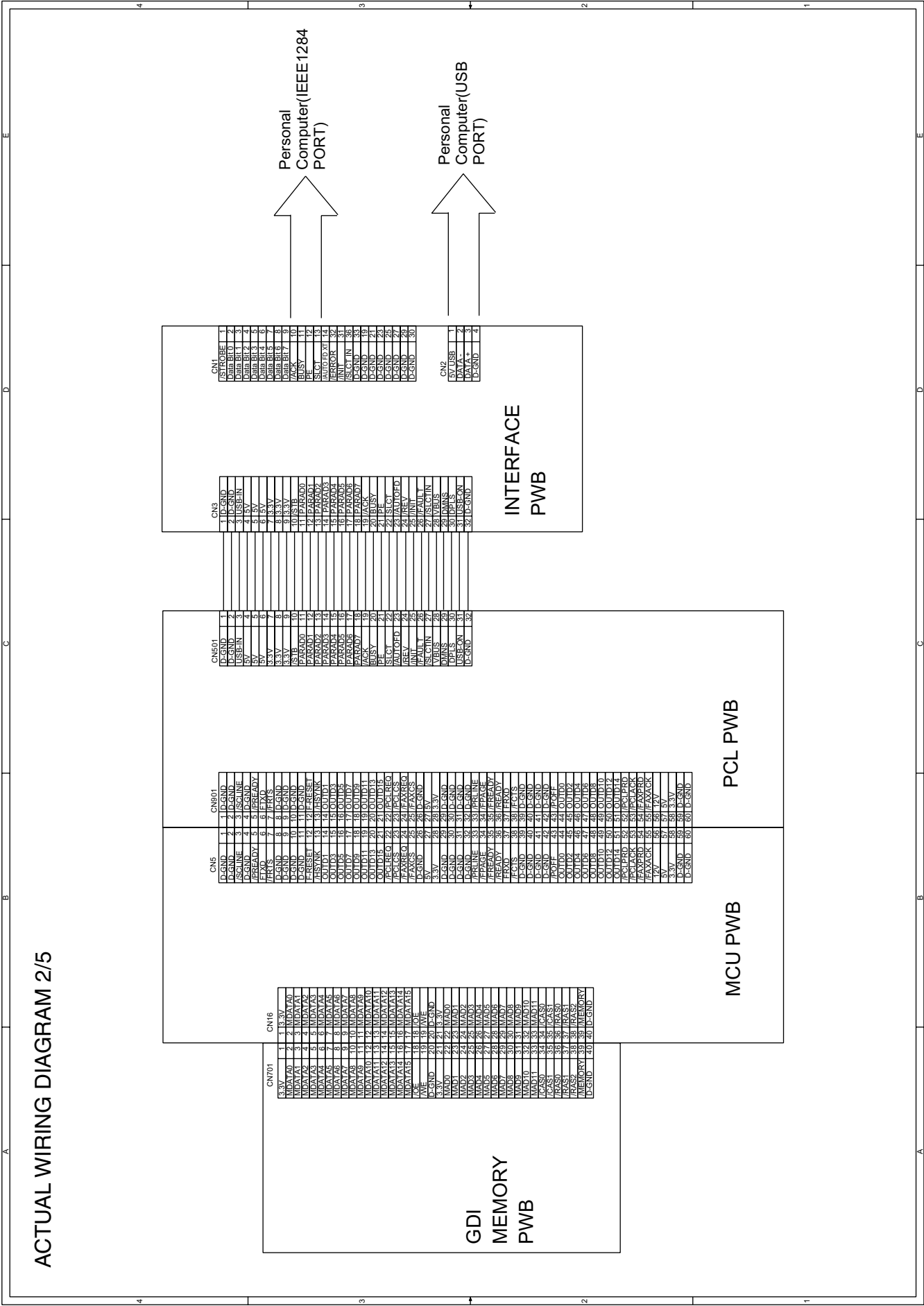


CIRCUIT DIAGRAM (LOW VOLTAGE BLOCK)

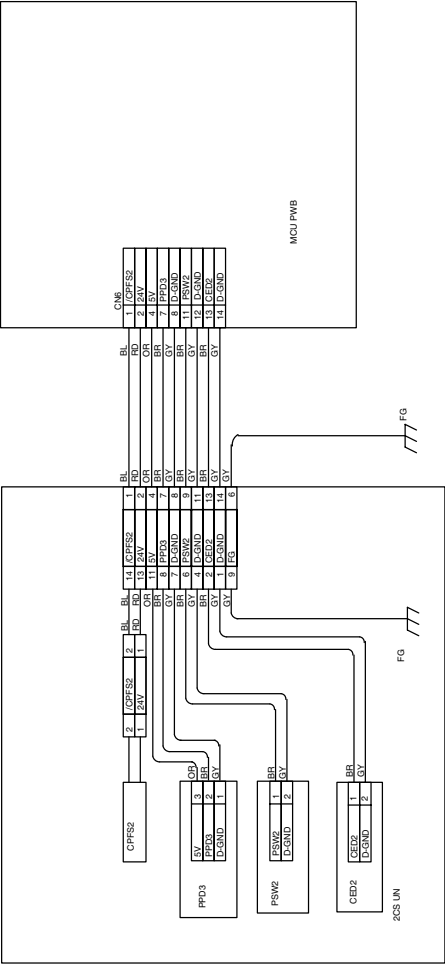




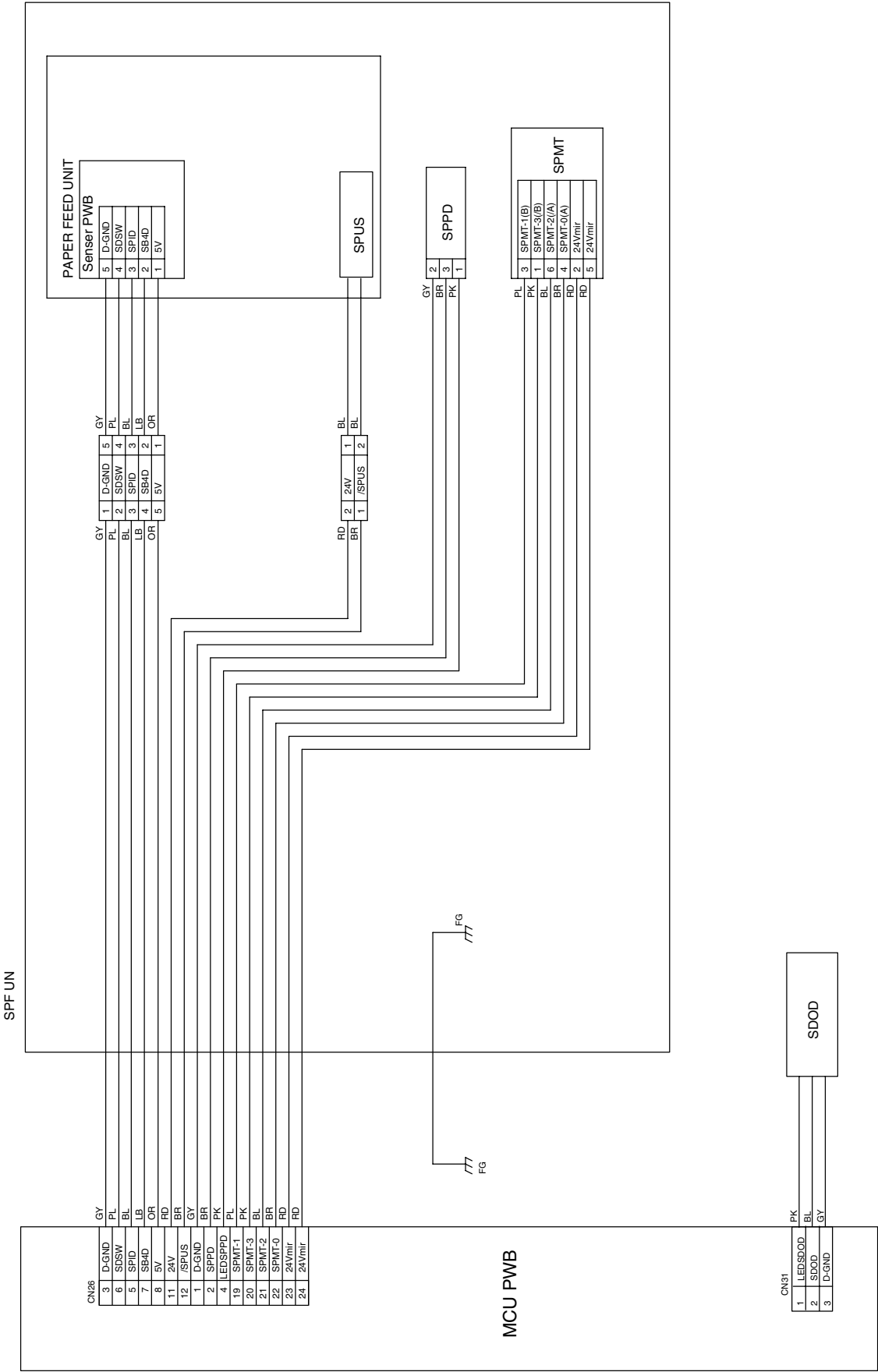
ACTUAL WIRING DIAGRAM 2/5



ACTUAL WIRING DIAGRAM 3/5

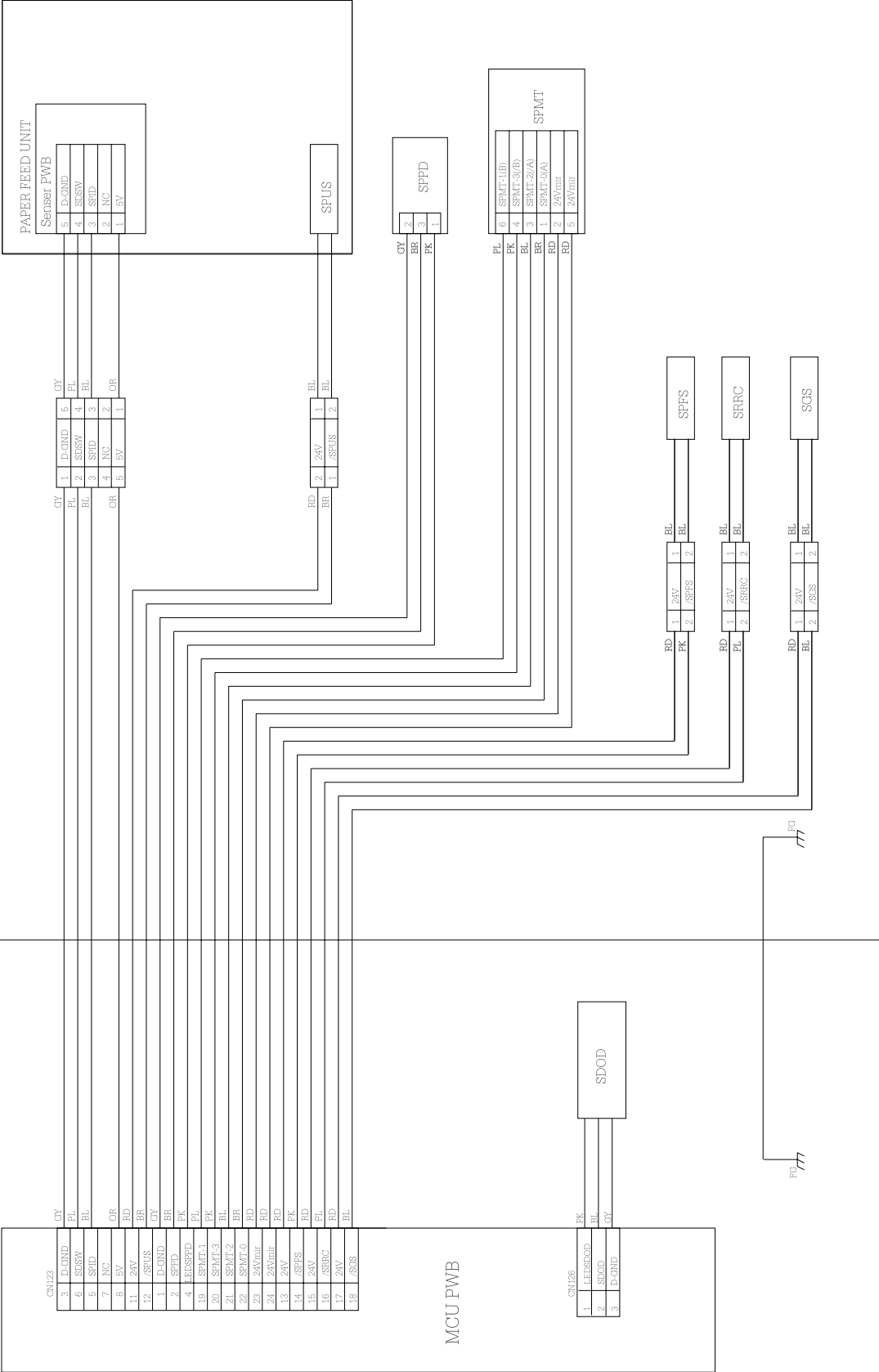


ACTUAL WIRING DIAGRAM 4/5



ACTUAL WIRING DIAGRAM 5/5

DSPF UN



CAUTION FOR BATTERY REPLACEMENT

- (Danish) ADVARSEL !
Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandoren.
- (English) Caution !
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the manufacturer.
Dispose of used batteries according to manufacturer's instructions.
- (Finnish) VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.
- (French) ATTENTION
Il y a danger d'explosion s' il y a remplacement incorrect
de la batterie. Remplacer uniquement avec une batterie du
même type ou d'un type équivalent recommandé par
le constructeur.
Mettre au rebut les batteries usagées conformément aux
instructions du fabricant.
- (Swedish) VARNING
Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.
- (German) Achtung
Explosionsgefahr bei Verwendung inkorrektter Batterien.
Als Ersatzbatterien dürfen nur Batterien vom gleichen Typ oder
vom Hersteller empfohlene Batterien verwendet werden.
Entsorgung der gebrauchten Batterien nur nach den vom
Hersteller angegebenen Anweisungen.

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